CONSOLIDATED GAS CO. MAKES PLANS TO SELL ELECTROLUX IN BOSTON

Boston, Mass.—During a meeting of the entire sales force of the Boston Consolidated Gas Company, held on October 4, in the company's auditorium, Frank D. Cadawallader, vice-president, announced that organization had been appointed distributor for Electrolux gas refrigerators in metropolitan Boston, and that a special sales force has been organized to handle gas refrigerators exclusively.

The meeting, which marked the eighth anniversary of the invention of the gas refrigerator, was addressed by H. W. Foulds, vice-president in charge of sales, Servel Sales, Inc., distributing organization of Electrolux. Mr. Foulds, who came from New York for the occasion, told how two Swedish students, Baltzar von Platen and Carl Munters, had succeeded in perfecting a system of refrigeration that scientists had sought for more than a century—constant, low cold without the aid of machinery or moving parts. These two boys of 21 perfected their device while attending the Royal Technological Institute at Stockholm, Sweden.

Following Mr. Foulds and Mr. Cadawallader, short talks were made by D. C. Lewis, Electrolux sales engineer for the metropolitan Boston territory, and MacLean Hoggson, Electrolux sales manager for the district. More than 125 men were present at the meeting, which was preceded by a buffet supper. In concluding his announcement, Mr. Cadawallader said that his company's action in beginning distributorship for refrigerators in the fall was proof that the day had passed when the public regarded refrigeration as a summer commodity. It is now clearly recognized, he asserted, as a year-around necessity.

NORTHWEST G. E. MEN AFTER COMMERCIAL BUSINESS

Seattle, Wash.—About 225 dealers and salesmen from many of the sections of the Pacific Northwest attended a General Electric district conference held at the Olympic Hotel on Oct. 4. The conference was sponsored by Gordon Prentice, Inc., Northwest distributor.

F. M. Corliss and A. C. Mayer, of Cleveland, were the two General Electric executives present. Paul R. Prietsch, general manager of Gordon Prentice, Inc., extended the welcome to the delegates.

J. S. Bruce, sales promotion manager of the local distributor, reported that sales in the Seattle and surrounding territory from Wenatchee to Kalama, Wash., are on the increase. Plans are under way for further expansion in the commercial field.

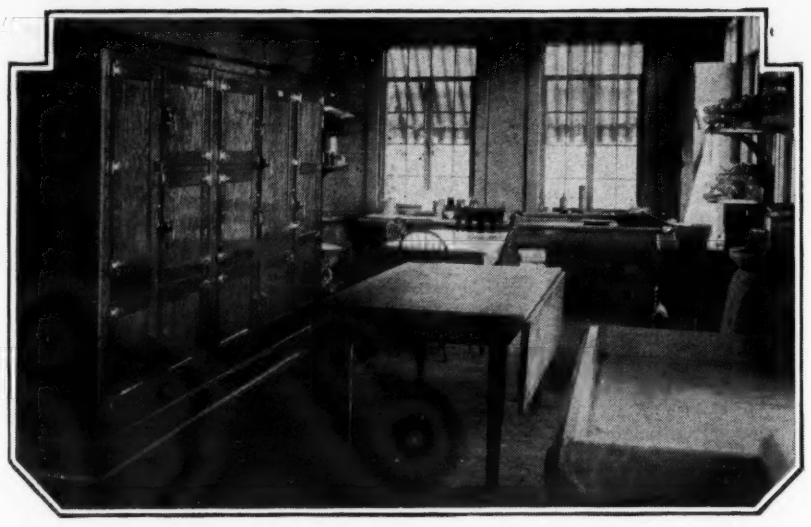
GORDON CO. APPOINTED DISTRIBUTOR FOR WAYNE

Kansas City, Mo.—James C. Gordon Company, Inc., of St. Louis and Kansas City, has been appointed by the Wayne Home Appliance Company, of Fort Wayne, Ind., manufacturers of Wayne electric refrigerators, distributor for eastern Missouri and southern Illinois territory.

ELECTROLUX DEALER USES LOCALIZED ADVERTISING

Uvalde, Texas.—J. H. Burns, Electrolux dealer, uses a localized method of advertising. He has circulars printed in several different colors, and distributes them to his prospects every week. Each circular cites specific examples of monthly gas and water costs of Electrolux refrigerators installed in the homes of various customers.

Servel, McCray and Thesco Units Installed In Country Club



McCray Cabinet in Kalamazoo Country Club

Consumers Power Co., Kalamazoo, Mich., recently installed Servel commercial equipment in the Fairmont Hospital and Kalamazoo Country Club. A Model 100 AW commercial machine cools the hospital commissary refrigerator which measures 8'x12'x10'. A model 50 AW machine is also used with a Thesco Ice Maker. The Country Club had a model 100 AW machine installed with a McCray combination 410 and 405 while a model 50 AW Thesco Ice Maker was placed in the basement.

REQUESTS FOR INFORMATION

Readers who can assist in furnishing correct answers to inquiries, or who can supply additional information, are invited to address Electric Refrigeration News, referring to the query number.

Refrigerator Parts

Query No. 293—"We would like to get in touch with one or more companies that could supply, in large quantities, the electrical and refrigerating parts for household electric refrigerators. In other words, what we would like to do is to get in touch with some concern that could supply the parts for such refrigerators that could be assembled at some other point."

Wire Shelving

Query No. 294—"We would like to have some wire shelving made up. Could you suggest where we could have this done?"

Exports of Electric Refrigerators

Query No. 295—"I have been unable to obtain from the Department of Commerce at Washington, D. C., the figures pertaining to exports of electric refrigerators to the following countries: Cuba, Mexico, Costa Rica, Guatemala, Salvador, Nicaragua, Honduras (Spanish and British), Panama, Colombia, Venezuela, the Guianas, British West Indies, French West Indies, Virgin Islands, Porto Rico, Santo Domingo, and Haiti. Have you any figures for 1928 and 1929 covering exports to these countries?"

Answer—See page 15 of the July 3 issue of the News for a complete tabulation of electric refrigerator exports from January, 1927, to April, 1929, inclusive.

Superior Iceless Refrigerator

Query No. 296—"Can you give us any information about the Superior Iceless Refrigerator Co., formerly located in Canton, Ohio, and previous to that time in Lima and Wapokoneta, Ohio. The Superior Company was bought out by Couzens and moved to Detroit and afterwards it was taken to Canton.

"We are in need of some parts for the Superior machine, and have been unable to get any reply to letters sent to the Canton company."

LITERATURE OF MANUFACTURERS

Catalogues, bulletins and other direct advertising material recently issued.

Manufacturers are requested to send copies of new trade literature promptly to Electric Refrigeration News.

Acorn Opalite

A folder showing refrigerators, floor coolers and combination installations, finished in colored porcelain enamel and Formica, has been distributed by Acorn Opalite Metal Specialties Co., 1052-1054 W. Monroe St., Chicago, Ill. This equipment is for use in restaurants, lunch rooms, cafeterias and soda fountains.

Breuer Electric

Tornado portable electric blower, which cleans folding machines, linotype machines, type cases, paper cutters, presses, motors, floors and walls, is described on a card sent out by Breuer Electric Mfg. Co., 852 Blackhawk St., Chicago, Ill.

Dairy Refrigeration Co.

A gas or electrical installation consisting of a Glenn dairy icer, Larkin coil and Mercoid automatic control, is announced by Dairy Refrigeration Co., Milwaukee, Wis. The Glenn dairy icer has a milk cooling capacity of 2,000 lbs. daily.

Kalamazoo Vegetable Parchment

Rainbow colored shelf and lining paper, illustrated in blue, pink, yellow, green and white, is manufactured by Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich. K V P wax paper, also manufactured by this company, can be used to keep foodstuff moist during the period it is stored in the refrigerator.

Milburn Refrigerator

Kalamazoo refrigerator display cases and refrigerators are illustrated and described in a catalog sent out by Milburn Refrigerator Co., Kalamazoo, Mich. Six display cases, one florist's case and three walk-in coolers are illustrated.

Mueller Brass

A catalog from Mueller Brass Co., Port Huron, Mich., illustrates standard electric refrigeration parts, consisting of shut-off valves and flared tube fittings. Tees and elbows are forged while the union couplings and nuts are machined from extruded brass rod. They are strong, non-porous and have sharp, uniform threads. Any Mueller shut-off valve can be made up to suit specification, where special connections are required.

NORTHWESTERN FRIGIDAIRE MEN HONORED

Portland, Ore.—At the completion of the Frigidaire district meeting here, which convened in the newly completed headquarters, 14 salesmen on the staff were commended for holding the highest sales records for the last three-quarters of the year:

They were: W. H. Bewley, G. D. Orput, L. B. Wilhelm, Charles Conkling, R. R. McIntyre, George Hurley, Myrl Paterson, H. Miller, A. B. Cunningham, W. H. Williams, Oliver P. Wilson, R. A. Twiss, L. Van Marter and William Schroeder.

TULSA COMPANY BUYS FRIGIDAIRE AGENCY

Tulsa, Okla.—Reorganization of the Tulsa Refrigeration Company, formerly operated as a branch of the state Frigidaire agency at Oklahoma City, of which W. C. Dance is manager, into a wholly Tulsa concern was announced by Ned E. Doak, manager and stockholder in the new corporation. Associated with Mr. Doak in the company are D. Vensel, Robert G. Hudson, W. J. Campbell and Wash E. Hudson, all prominent Tulsa business men. The company will handle Frigidaire equipment in Tulsa and Sand Springs.

The new agency is located at 708 So. Main Street, in the recently completed Duffy building.

Mr. Doak came to Tulsa from New Orleans, where he was manager of the Frigidaire factory branch. For the past twelve years he has been a factory representative of Frigidaire products.

The company reports that the 1929 sales of Frigidaire products are about six times that of 1928, and there are now some 3,000 Frigidaire installations in Tulsa.

NEW ENGLAND UTILITIES SOLD 101 MACHINES IN AUGUST

Boston, Mass.—The August appliance sales of the New England Power Association totaled $133,224. This includes sales of 101 electric refrigerators.

Sales totals for the month of several of the member companies were: Worcester Electric Light Co., Worcester, Mass., 16 refrigerators; Lawrence Gas & Electric Co., Lawrence, Mass., 12; Lowell Electric Light Corp., Lowell, Mass., 14; and the Gardner Electric Light Co., Gardner, Mass., 4 refrigerators.

Narragansett Electric Co., Providence, R. I., won the cup which is awarded monthly for the highest electric refrigerator sales total by the Electric Refrigeration Co. of New England. Twenty-four were sold by this company to win the trophy.

DAIRYMEN SHOW INTEREST IN GREENSBORO INSTALLATION

Greensboro, N. C.—H. S. Sydnor, salesman in the Greensboro sales department of the Southern Public Utilities Co., Charlotte, N. C., recently installed an electric refrigeration system on a dairy farm which attracted the attention of the surrounding countryside. So many people came to look at the job that Mr. Sydnor arranged for a meeting. About 200 dairymen attended.

There were several speakers, including the Greensboro city health official, Dr. M. E. Doyle. Mr. Sydnor explained the workings of the refrigeration system and gave a demonstration.

KANSAS AND MISSOURI G. E. MEN HEAR SALES TALKS

Kansas City, Mo.—Two hundred and forty-five dealers and salesmen of Missouri and Kansas attended a fall sales General Electric refrigerator meeting, held on October 1 in the Medical Arts Building, and at the University Club.

At a dinner in the evening, L. E. Reid, of the American Electric Co., Kansas City; Ivan C. Bushong, president of the Municipal Power Transmission Co.; and J. J. Donovan, manager of the apartment house division of the General Electric Co., gave talks. M. A. Glueck, of Glueck & Company, Kansas City, acted as toastmaster.

DOMESTIC UTILITIES TO INCREASE OUTPUT

Baltimore, Md.—Domestic Utilities, 2117 N. Charles St., increased its manufacturing and refrigeration accessory business facilities by the purchase, Oct. 1, of a two-story factory building, 57 ft. by 96 ft., located at Garrison Ave. and Western Maryland Ave. R. R.

The new factory will be used to increase the manufacture of Coldbloc and Reco milk coolers as well as special tanks and other refrigerating equipment.

C. E. Lowman, formerly Kelvinator district sales manager for Maryland and Virginia, is president of Domestic Utilities.

COONEY REFRIGERATION CO. FORMED IN BUFFALO

Albany, N. Y.—Cooney Refrigeration Co., Inc., 762 Crescent Ave., Buffalo, N. Y., was organized October 15 to manufacture refrigeration devices. Edwin R. Cooney, Buffalo, N. Y.; Jerry F. Cooney and James L. Cooney, Syracuse, N. Y., are directors of the company.

GALLOWAY CO. ENLARGES HEADQUARTERS

Memphis, Tenn.—W. P. Galloway Co., Frigidaire distributor, has expanded its headquarters in the Arcade Building. They have leased additional space on the second floor, and now occupy three-quarters of the entire second floor of the building.

THE CONDENSER

ADVERTISING RATE fifty cents per line (this column only).

SPECIAL RATE if paid in advance — Positions Wanted — fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each. All other classifications—fifty words or less, one insertion $3.00, additional words six cents each. Three insertions $8.00, additional words sixteen cents each.

POSITIONS WANTED

CHIEF ENGINEER AVAILABLE—Ten years' experience in electric refrigeration with leading manufacturers in charge of engineering design and production methods. Wishes to communicate with manufacturer east of St. Louis. Box No. 180.

Chief Engineer, with ten years' electric refrigeration design, development and production experience, wishes to get in touch with a manufacturer. Box 202.

MISCELLANEOUS

ENGINEERING: Domestic and small commercial compressors and refrigerating equipment designing service. Developers of your ideas with strict protection to you. Years of successful record. All correspondence strictly confidential. Address, Box 204.

25—S 7 Servel Electric Refrigerators complete. Offered at attractive prices. Details on request. Box 205.

Continuous Absorption Refrigeration System

Now ready for production

Owner desires to dispose of patent rights or license Manufacturers for production and sale on royalty basis. This system is adapted for domestic and industrial applications and operative by gas, oil or electricity.

Principals only address Box 201

MANUFACTURERS OF

Sheet Metal Parts

To Your Specifications

Bases, Angle Iron to support units.
Guards—to enclose units.
For Household Refrigerators we make outside steel panels, food compartments, etc.
Ice Cream cabinets and parts.

MOTORS METAL MFG. CO.
5936 Milford St. - Detroit, Mich.

The Imitation Food Products Co.

(Branch of The Artistic Production Co.)
107 Lawrence Street
Brooklyn, N. Y.

Ask for our catalog of May 1, 1929. Many new items. Greatly reduced prices. Direct sales only. "Indispensable with refrigerator display."

V-TYPE BELTS AND OTHER RUBBER ACCESSORIES
for the
REFRIGERATION INDUSTRY

Original Makers V-type Belts—"RED STRAND" brand—our latest development. Also Anti-Noise Rubber Bushings.

GLOBE RUBBER & TIRE CO., INC.
Prospect and Globe Sts.
Trenton, N. J., U. S. A.

BACK UP THE INSULATION
in the walls of your
CABINET
by sealing the doors with
Rider's "PNEU-DOOR SEAL"
Assuring
100% Efficiency
P. L. RIDER CO.
WORCESTER, MASS.

Subscription Order

ELECTRIC REFRIGERATION NEWS,
550 MACCABEES BUILDING, DETROIT, MICH.

Please enter subscription to Electric Refrigeration News.

United States and Possessions:
☐ $2.00 per year. ☐ Three years for $5.00

All other Countries:
☐ $2.25 per year. ☐ Two years for $4.00

I am enclosing payment in the form of
☐ Check ☐ P. O. Order ☐ Cash

Name.....

Street Address.....

City and State.....

Remarks:.....

ELECTRIC REFRIGERATION NEWS

The business newspaper of the refrigeration industry

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SEE REFRIGERATION AS 1930 LEADER OF MAJOR APPLIANCES

Provides Answer to Central Station Load Problem

Cleveland, Ohio—That the electric light and power companies are in the same position as a manufacturer with excess production capacity, was submitted by Chairman H. H. Bosworth as the basis for discussion of mutual interest in developing the market for electric refrigeration at the second Central Station Conference held by the Refrigeration Department of the General Electric Company in Cleveland, Ohio, Monday and Tuesday, November 4-5.

Reviewing the progress of the electric refrigeration industry and the trend of its market, P. B. Zimmerman, general sales manager of the G. E. Refrigeration Department, expressed the opinion that this year will mark a change in the attitude of public utility executives. From now on, he declared, commercial activities will be the most important phase of the public utility business, and commercial managers will assume a position of first importance. Among all industries now visualizing business prospects for 1930, he said, central stations stand in an excellent competitive position for several fundamental reasons:

First, rates for electricity average twenty-five per cent lower than the prewar level, while prices of other commodities average seventy per cent higher. There is also an opportunity for further reduction in rate structures by adding additional load to existing lines.

Second, manufacturers of electrical appliances are in an excellent position to give high value for the customer's dollar.

Third, the electrical idea is the modern idea, and the style factor is so strong at present that the public would buy even if the price of electrical appliances were higher.

Mr. Zimmerman pointed out that electric refrigeration ranks high in the interest of central station men, first, because the electric refrigerator is the only appliance which practically doubles the revenue per customer. Second, it is the only appliance that can provide a continued increase in consumption and take the place of the increase formerly gained by the wiring of old homes. Third, the electric refrigerator is the only device that gives the diversified load factor so much desired by the central station. Refrigeration is the most profitable ap-

(Concluded on Page 4, Column 4)

PITTSBURGH SENIORS WILL WRITE THESES ON REFRIGERATION

Pittsburgh, Pa.—Eight senior students in the mechanical engineering department of the University of Pittsburgh have selected thesis subjects concerning household refrigeration problems. This work will be done under the direction of F. H. Stiening, who is responsible for the addition of a household refrigeration laboratory to the mechanical engineering department. Testing apparatus has been installed and the laboratory is equipped with the majority of prominent household refrigeration units as well as experimental units which have been built in the University shops.

R. L. Kirkpatrick and J. A. Neeson will make a study of seals used on domestic refrigeration machines. J. A. McEwen and S. M. Phillips will investigate heat transfer in finned tube condensers. E. G. Miller and L. L. Thomas will study the heat transfer in refrigerator cabinets. J. J. Boes and D. N. McClelland will determine the capacity and cost of operation of domestic units under various conditions.

A novel campaign for securing a badly needed electric refrigerator is being conducted by the friends of the Appleton Church Home, Macon, Ga. This home for dependent children is so anxious for a General Electric refrigerator that it is calling upon its friends to help them by collecting Octagon coupons. A great many have been received already, but as it will take over 100,000 to purchase the desired refrigerator, it will be necessary that a great many more coupons be collected.

Those who would like to contribute coupons to this purpose may address them to the Appleton Church Home, Macon, Ga. Coupons from any of the Octagon products will count.

The number of children in this home makes a rather large family. An electric refrigerator would facilitate feeding problems.

G. E. Announces Price Reduction

Cleveland, Ohio—The General Electric Company announces new low prices on its entire line of porcelain electric refrigerators.

According to P. B. Zimmerman, general sales manager, a reduction of $25.00 and special attractive terms on General Electric refrigerators places this product within easy reach of many thousands of people who have wanted electric refrigeration, but felt that they could not afford them.

"The necessity of perfect electric refrigeration has been impressed in the minds of many by the recent National Food Preservation campaign," he said. "The importance of keeping perishable foods at a low temperature below the 50 degree danger line was stressed in magazines and newspapers all over the country.

"The General Electric Company feels that it can further this good work by a price reduction and easy time payments."

FRIG-O-MATIC TO MARKET NEW LINE OF DOMESTIC UNITS

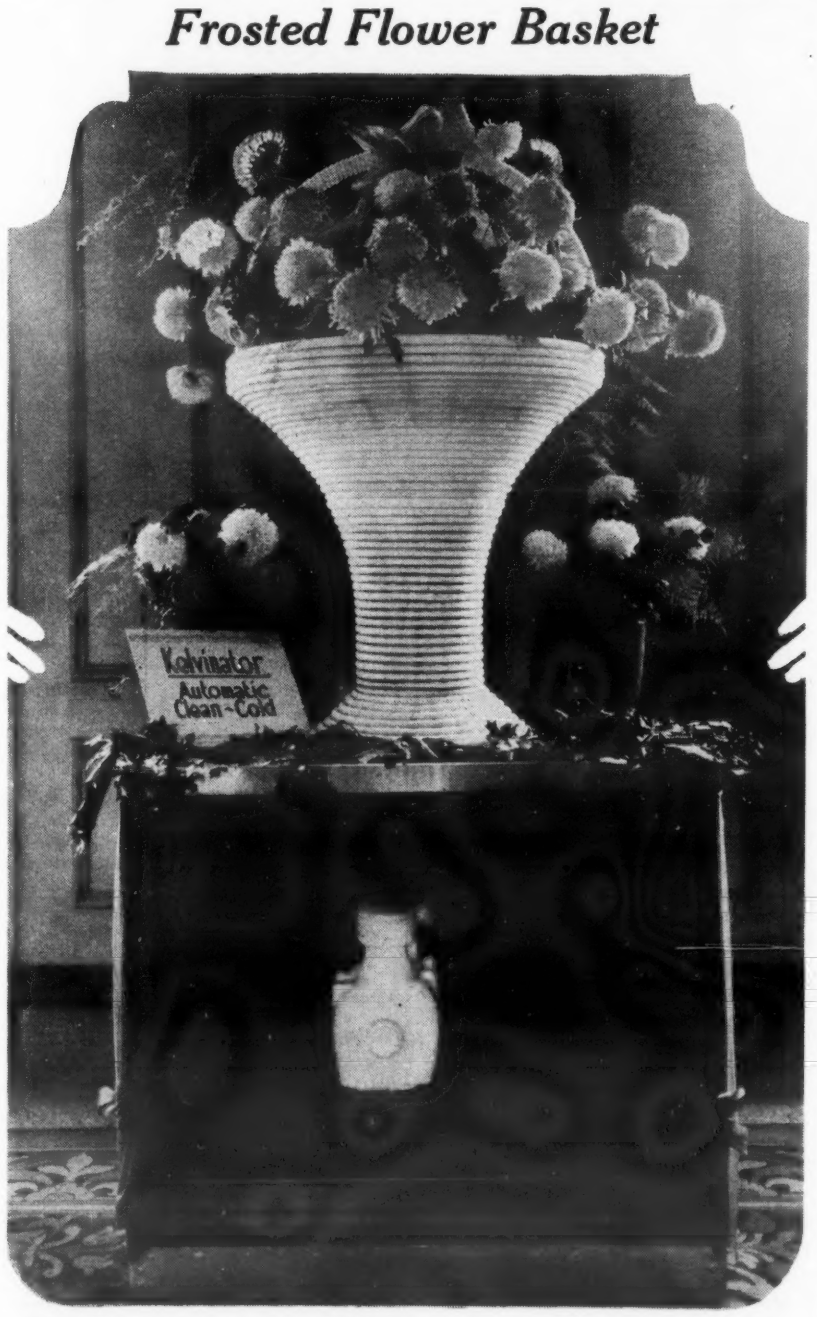
Brantford, Ontario, Canada—Coal-O-Matic, Ltd., manufacturer and distributor of Frig-O-Matic electric refrigerators, will market a line of self-contained household units within the next month.

The self-contained units will be finished in enamel and porcelain and will be constructed of either wood or steel.

Coal-O-Matic is a distributing agency for Dominion Blower Co., which has been in the industrial heating and ventilating business for several years. This year it took over electric refrigeration, but confined all of its work to multiple installations in apartment houses.

Executive offices of the company are located here; branch offices are located at 386 King St., Toronto; 860 St. James St., Montreal; and 134 Bank St., Ottawa. A. E. Spowage is president and general manager.

Frosted Flower Basket



FROSTED flower basket on display in the lobby of the London Hotel, London, Ont., Canada, during the Dominion of Canada Kelvinator distributors' convention, which was held at London during the closing days of October. The basket, which was pure white, measured five feet from the base to the top of the handle.

CANADIAN DISTRIBUTORS FOR KELVINATOR MEET

London, Canada.—From as far east as Sydney, Nova Scotia, and as far west as Victoria, B. C., delegates journeyed here for the two-day convention of the Canadian Kelvinator distributors, held at the Masonic Temple, October 29-30. In all, some 200 delegates were in attendance, among them three representatives from every principal city in Canada.

F. S. McNeal, general manager of Canada Kelvinator, Ltd., acted as chairman of the various meetings. The convention was opened with an address of welcome from W. H. Wood, London Chamber of Commerce. The welcome on the part of the local Kelvinator representatives was given by Chairman McNeal.

Speakers on the first morning program included J. S. Bray, F. S. McNeal, general manager, and A. V. Phillips, of the commercial sales and engineering department of Canada Kelvinator, Ltd. Speakers from the factory in Detroit were: Vance C. Woodcox, domestic sales manager; C. M. Armstrong, manager of ReDisCo; A. H. Jaeger, sales manager of Leonard Refrigerator Co., Grand Rapids; H. A. Lewis, treasurer, and B. H. Morash, Kelvinator, Ltd., London, England; P. H. Manross, assistant general manager of Canada Kelvinator, explained developments in the Kelvinator product to the representatives. A. H. McLellan, demonstrated the use of films in sales work, and B. H. Bull talked on installation and service methods; H. E. Jones discussed "The Four Facts." The 1930 advertising program in Canada was the theme of a talk by T. H. Yull, director of McConnell & Ferguson. Earl Lines, director of advertising and sales promotion of Kelvinator Corp., Detroit, outlined the 1930 advertising program.

The whole meeting was summed up in a speech by H. A. Lewis, Kelvinator treasurer, who characterized the meeting as one of the best in Kelvinator history.

Will Market Rotorite Unit

Evansville, Ind.—Sunbeam Electric Mfg. Co., Morgan Ave., which purchased the Rotorite patent rights from Indian Motorcycle Co., Springfield, Mass., a few months ago, will begin production of electric refrigerators about Jan. 1, 1930, W. A. Carson, president, announces.

The Rotorite machine, which has been on the market for several years, was originally manufactured by the Rotorite Corp. in California, and a number of improvements are being made in the machine by the Evansville company.

DETROIT ENGINEERS TO DISCUSS FROZEN FOOD, ROOM COOLING

SUBJECTS for discussion at the coming series of meetings of the Detroit Section, American Society of Refrigerating Engineers, were tentatively agreed upon when the officers of the Section met with the program committee at the Detroit-Leland Hotel, Friday evening, November 1. C. C. Thomas, of the Kelvinator Corporation, is general chairman of the program committee.

Room cooling and air conditioning are the topics selected for the opening session November 18. The place of the meeting has not yet been definitely decided, but will probably be held at one of the Detroit hotels or clubs instead of at the Engineering Society's Building where the Section has been in the habit of meeting.

December 9 will be the date of the annual election of officers and the social event of the Section. Technical discussion will be supplanted by entertainment.

New methods of preserving and transporting food, such as meat, fish, berries and fruit, in frozen condition, will be presented at the first meeting of the new year scheduled for January 6.

Improvements and refinements in the construction of refrigerator cabinets will be taken up at the February 3 meeting.

On March 3 the plan is to hold an experience meeting for service men conexperience meeting for servicemen concerned with the maintenance of household refrigeration systems.

Lubrication and refrigerants are two important subjects which have been receiving a great deal of attention, and results of research in this direction will be taken up at the April 7 meeting.

On May 5 the engineers will invite the executives connected with the leading manufacturing establishments to discuss the business aspects of the refrigeration industry.

HUSSMAN-LIGONIER CO. ACQUIRES GRUENDLER

St. Louis, Mo.—Hussman-Ligonier Co., manufacturers of commercial refrigeration cabinets, has acquired Gustav J. Gruendler Mfg. Co., 814 N. Broadway, also producers of commercial refrigeration cabinets, according to an announcement by John E. Riley, president of the former concern.

The Allied Store Utilities Co., Mr. Riley also states, has been organized to merchandise the products of the four companies which now comprise the Hussmann-Ligonier Co. They are Hussman Refrigerator Co., Ligonier Refrigerator Co., Steiner Mfg. Co. and Gustav J. Gruendler Mfg. Co. It is expected that officers of the consolidated company will occupy similar positions in the merchandising concern.

Sales of Greundler refrigerators will be continued from the present headquarters at 814 N. Broadway, and its manufacturing plants at Second and Sidney Sts. will be enlarged to take care of its increased volume of sales, which from January 1 to the middle of September reached a figure in excess of the total 1928 volume. Sales for last month, it was reported, were 100 per cent above the figure for the corresponding period a year ago.

The Gruendler company has been in existence for about forty years. The management will remain the same as in the other plants, and Gustav Gruendler, together with his sons, Gustav, Jr., vice-president, and Louis, Secretary, will join the directorate of the Hussmann-Ligonier Co., which was formed last February through the consolidation of the Hussman, Ligonier, Steiner and Namsuh Investment companies. The consolidated companies have plants here, Ligonier, Ind., and Yardley, Pa.

HEAT AND MOISTURE RESISTANCE, KEY TO INSULATION VALUE

H. P. Lindsay Presents Paper to Chicago Section, A. S. R. E.

Chicago, Ill.—Approximately 50 members of the Chicago section of the American Society of Refrigerating Engineers (headquarters at 37 W. 39th St., New York City) attended a dinner meeting held at the Engineers Club, October 29. H. R. Halterman, president, presided at the technical session. A paper pertaining to insulation was presented by H. P. Lindsay, president of the Dry-Zero Corp., Chicago, Ill.

The first part of Mr. Lindsay's paper dealt with the many factors which affect heat transfer through materials and moisture absorption of insulating materials.

He made an appeal to the men of the industry that the problem of insulation be considered just as important as any other part of a refrigerating system and be specified on a heat resistance and a moisture resistance basis, and not just as so many inches of filling material for a refrigerator.

Mr. Lindsay also pointed out that the application of insulation to small refrigerators is considered a more difficult problem than the application to cold storage plants, hardening rooms, etc.

It was demonstrated that in spite of the accurate data on insulating materials, many errors can result if adequate consideration is not given to the radiation losses due to the surface of the materials. An interesting example of this was a test made with three thermometers, one of which is a clear glass, another painted black, and the third painted black with a baffle backing. All three of these thermometers were placed a certain distance from a radiant fire heater. The clear thermometer registered 106 degrees F., when the black thermometer registered 139 degrees F., and the black thermometer with a baffle behind it registered 213 degrees F. A similar test, he stated, performed with the sun as the heat source, showed a difference of 42 degrees.

In conclusion, Mr. Lindsay reiterated that engineers should be aware of the fact that insulation is a very important item in refrigeration, and should be given much more consideration that has

(Concluded on Page 8, Column 4)

CUPS FOR COPELAND LEADERS DEPEND ON TEN MONTHS' RECORD

Detroit, Mich.—With two months more to go, the national sales contest for distributors and dealers of Copeland Products, Inc., has taken on a new tempo. Standings of November 1 indicate that while the leaders in each of the eight groups are maintaining their positions, their leadership is being threatened by competitors, who have hit a stride that is shortening the distance between them and first positions.

The contest started March 1, with the country divided into eight groups based on population, and a cup is to be given the winner in each group. The trophy becomes a permanent possession following three victories.

The three leaders in each group on November 1 were:

Group 1—Copeland Refrigeration Co. of New York; Copeland Refrigeration Co. of Chicago; and Copeland Refrigeration Co. of Detroit.

Group 2—Copeland St. Louis. Co.; Northeastern Radio Sales Corp., Boston; Copeland Refrigeration Co., Milwaukee.

Group 3—Fink Electric Refrigeration Co., Cincinnati; Harper-Meggee, Inc., Seattle; and Edw. N. Eberling & Co., New Orleans.

Group 4—Binder Electrical Supply Co., Trenton, N. J.; Charles Rice, Inc., Springfield, Mass.; Tulsa Copeland Refrigeration Co., Tulsa, Okla.

Group 5—B. L. Johnson Co., Inc., Bethlehem, Pa.; Hagen Furniture Co., Hammond, Ind.; Copeland Refrigeration Co., Roanoke, Va.

Group 6—W. P. Wookey, Pittsfield, Mass.; East End Cycle Co., Middletown, Ohio; Knight-Copeland Co., Inc., Colorado Springs.

Group 7—Feltus Engineering Co., Vicksburg, Miss.; Good Housekeeping Shop, Inc., Kingston, Pa.; Yowell-Drew & Co., Orlando, Fla.

Group 8—Clifford J. Benedict, Warwick, N. Y.; Earl E. Holden, Jr., Hyannis, Mass.; Knecht Feeney Electric Co., Mt. Vernon, Ohio.

GENERAL ELECTRIC ADVERTISING MEN HOLD JOINT SESSION

Cleveland, Ohio.—Advertising, sales promotion, budgets, media, schedules and other subjects of interest to advertising and sales promotional men of the General Electric Company and associated companies were taken up at the Advertising Committee meeting held October 7-9. The first day of the meeting was spent at Nela Park. M. P. Rice opened the session, introducing C. H. Lang, who talked on "Sales Analysis." High spots of future advertising and sales promotion took up the remainder of the morning and were discussed by W. A. Grove, E. C. Goddard, O. B. Capelle, C. E. Davis, A. O. Osterling, H. H. Reeves and H. H. Rimmer. After luncheon the subject was resumed and G. H. Starbuck, D. S. Mix, W. A. Bowe, B. W. Bullock, J. W. McIver, H. H. Greene, D. C. Spooner participated in the discussion.

Discussions relating to preceding presentations were summarized by C. W. Stuart, and the subject of "Budgets and Media" by C. W. Stuart and F. R. Davis closed the first day's meeting.

P. B. Zimmerman, general sales manager, Electric Refrigeration Department, opened the second day of the meeting at the Refrigeration Institute with the subject of General Electric refrigerator advertising.

High spots of refrigerator advertising and sales promotion were taken up by L. R. Edwards, manager, advertising division, and E. H. Norling, sales promotion division, followed by: "Important Magazines Not on G. E. Schedules," by F. R. Davis; "Interviewing Publisher's Representatives," by O. C. Spooner; "Statements in Advertising Unfavorable to Customers," by M. P. Rice; "Use of Slogans," by W. A. Grove; "Use of G. E. Appliances in Illustrations of All G. E. and Associated Companies," by W. K. Updyke; "Use of Art Posters," by W. J. Reagles; "Farm Electrification," by W. A. Bower; "4-H Clubs," by B. W. Bullock; "G. E. Supply Corporation," by R. W. Haege; "Co-operative Material and Advertising Used for G. E. Hour," by W. A. Bowe; "The G. E. Hour," by M. P. Rice; "Newspaper Advertising," by T. J. McManis.

W. A. Bowe opened the third day of the meeting with a discussion of General Electric magazines for distribution to customers. Other subjects discussed were: "G. E. Style Book," by C. W. Stuart; "Package Inserts," by T. J. McManis; "Standardization of Trucks, Packages and Cartons," by T. J. McManis; "Co-operation of Field Sales Representatives," by R. L. Gibson; "The G. E. Sunlamp," by M. L. Sloan; "The Sprague Electric Relay Take-up Signs" (with movies), by T. J. McManis; "Modern Merchandising Publicity," by H. F. Barnes and C. W. Stuart. This subject was illustrated with talking movies. Inspection of Nela Park plant concluded the three-day meeting.

Coordinating the Advertising Plans for All Departments of a Large Organization

General Electric Men at Three-Day Cleveland Conference

FRIGIDAIRE MEN SEE EUROPEAN TREND TO AMERICAN METHODS

Dayton, Ohio.—Five European representatives of Frigidaire Corp., G. D. Riedel, European manager; H. L. McGurk, London; Edgar Carmel, Paris; F. H. Riehle, Milan, Italy; and W. J. Hilldenbrand, Berlin, met Oct. 22 for a three-day conference with L. C. Shannon, foreign manager. R. H. Grant, vice-president of General Motors in charge of sales, spoke on the selling problems of the export field.

According to these foreign representatives, American customs and business methods are now making greater progress in Europe than ever before.

"The United States and Europe are getting much closer together, thanks to the proposed Young plan, the transatlantic telephone, the talking movies, and a growing respect in Europe for American products and business methods; there was a time, not so long ago, when such products and methods were not so highly esteemed, but that period has passed," said G. D. Riedel, European manager for Frigidaire. He continued by saying that American type apartment house, with central heating plant, built-in conveniences and other features, is becoming popular in the larger European cities, and that apartment dwelling is particularly advanced in Sweden. He also stated that in spite of the fact Europe experienced its coldest winter in 100 years during 1928, Frigidaire continental sales were far in excess of any other year.

Prominent continental Frigidaire installations during the past year were reported by the French, English, Italian and German representatives.

H. L. McGurk, London, announced the installation of Frigidaire equipment in the London hospital and on board the White Star liner "Britannic." A Frigidaire "snowball" is now on display in Picadilly station, said to be the busiest spot in the world.

Edgar Carmel, Paris, said that Georges Clemenceau, the Tiger of France, now in retirement, has had Frigidaire installed on his Brittany farm, as well as in his Paris home. President Doumergue of France had a household refrigerator placed in the Elyseè Palace, and an installation is now being completed on the S. S. "Lafayette."

According to F. H. Riehle, Milan, the Italian submarine which recently established a world's record for deep diving, has a Frigidaire aboard. The "Vulcania" and its sister ship "Santernia" of the Cosluic line, as well as the S. S. "Augustus," have been equipped with Frigidaire. The Milan branch recently made an installation in the Villa de Este, Lake Como hotel.

Business in Germany continues to increase in volume, W. J. Hilldenbrand, manager of the German branch, Berlin, reported. He predicted that compressors installed in Germany during 1929 will show a 100 per cent increase over 1928. The Berlin branch installed a mechanically cooled soda fountain in the S. S. "Bremen," which recently broke the record for a passenger ship crossing of the Atlantic Ocean.

Following a series of factory conferences arranged for the European branch managers, time was devoted to special business affecting Frigidaire operation in England and on the Continent.

COPELAND ACTIVE IN EXPORT FIELD

COPELAND'S export business for the first nine months of this year was 25 per cent greater than it was for the same period last year, according to H. M. Robins, Detroit, who directs Copeland's export business.

"Copeland is now represented in twenty-four foreign countries, with 35 dealer and distributor outlets, exclusive of Canada, where it has ten sales outlets. A marked increase in business is reported from Australia and South America, where considerable building is going on and where the American type of apartment house is being developed. In Australia, the demand for electric refrigeration is particularly strong. Copeland equipment has been installed in many clubs in the larger cities. Notable among these installations are those in the Queen's Club, Royal Sydney Golf Club, Tattersall's Club, and the Australian Club. Copeland also has been selected for use by the Federal Capital Commission in government buildings at Canberra, the new federal capital. These installations were made by Cooling System, Ltd., Copeland distributor for New South Wales.

"Our largest development has been in Australia, Argentina, Brazil and Canada. Our Brazilian busines is handled by the Allgemeine Electricitaets-Gesellschaft, which is finding a fertile field in the trend toward the apartment house type of dwelling. Sao Paulo is probably the most rapidly growing city in Brazil today, and electric refrigeration is coming more and more into use.

"In Germany we are ably represented through Carl Fink & Sons, who handle our products in the southern part of the republic. This company, an old, established firm, which has manufactured furniture and ice boxes for years, is unusually well situated to handle the distribution of electric refrigeration through its connection with the trade. This company, too, is particularly aggressive in the maintenance of service, Erich Fink, one of the sons, having visited the Copeland factory in Detroit about a year ago, spending considerable time at the factory service school."

VISITING REPRESENTATIVE REPORTS GOOD BUSINESS IN CANADIAN TERRITORY

Windsor, Canada—G. J. Ryan, western manager of Universal Cooler Co., Ltd., at present paying a visit to the head office of the company here, reports conditions in Western Canada as excellent.

"Never before has the prospects for refrigeration business looked so good," states Mr. Ryan, "and recent orders show a marked increase for ice cream cabinets, milk coolers and domestic refrigeration."

WILLIAMS ICE-O-MATIC SEE GOOD BUSINESS DURING LAST QUARTER

Bloomington, Ill.—With sufficient orders on the books to keep a double factory shift busy for the next two months, and shipments inaugurated of large commercial refrigerating units, C. U. Williams, president of the Williams Oil-O-Matic Heating Corp., reports the general outlook was excellent for the last quarter of 1929.

"The traditional seasonal slackening was not so pronounced this summer in many lines," he said. "Especially in the oil burner and refrigeration machine lines, the outlook never was so good. The public is seeking home labor-saving means as never before. Industrial city population and the better type farmers are better off than they have been in some time. Quantity production makes oil burners and refrigerating machines available for more home-owners than ever. Reports from dealers everywhere show business is good and getting better."

UNDERWRITERS APPROVE NEW COPELAND SYSTEM

Detroit, Mich.—The multiple system recently brought out by Copeland Products, Inc., using the multiple expansion valve and tank, also zero tubes, has been approved by Underwriters' Laboratories, Chicago.

IT'S NOT THE

WHICH » »

IT'S THE WHY

THAT REALLY COUNTS

LIPMAN ANSWERS THE "WHY" WITH LOWEST COST OF OWNERSHIP!

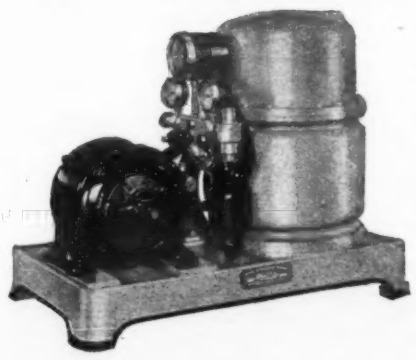
THE buying public seldom stops to contrast mechanical refrigeration with old-fashioned methods of cooling. The question is simply "*which* mechanical refrigerating machine shall I buy?"

Naturally, each dealer answers the query of "which" with the name of the machine he is selling. That's easy. But giving the "why"—facts which each prospective purchaser naturally insists on knowing—does not depend entirely upon each dealer's personal convictions.

The "why"—fortunately for some manufacturers—depends largely upon the merits of the machine itself.

That is where we believe Lipman dealers have an edge. Lipman dealers answer the "WHY" with Lipman's "lowest cost of ownership." "Lowest cost of ownership" is not merely a Lipman sales argument—it's an operating reality. Competitive test runs, without a single exception, have proved the superior operating economies of this precision-made machine.

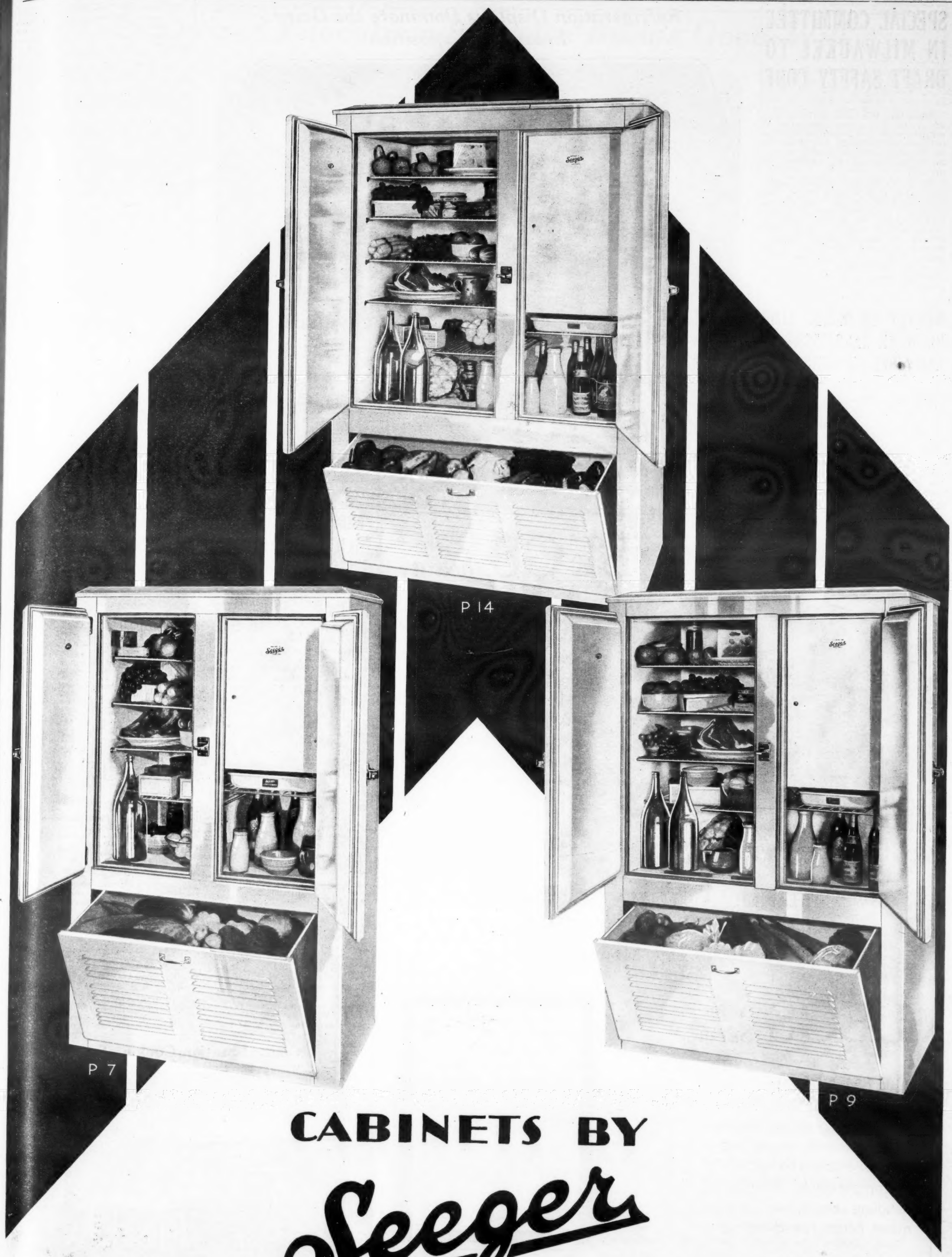
And because there's a size and model for every commercial purpose, the Lipman line is complete. Servicing expenses are unusually modest—profit on the sale of each machine is thus largely retained. The Lipman is the time-tested product of the pioneers in the manufacture of self-contained, full-automatic electric refrigerating machines for commercial purposes—the General Refrigeration Company, Beloit, Wisconsin.



Lipman
ELECTRIC REFRIGERATION

LIPMAN

COMMERCIAL ELECTRIC REFRIGERATION



CABINETS BY

Seeger

SAINT PAUL

SPECIAL COMMITTEE IN MILWAUKEE TO DRAFT SAFFTY CODE

Milwaukee, Wis.—The drafting of a city ordinance to govern installations of multiple electric refrigeration systems in apartment buildings was placed in the hands of a special committee, Oct. 25, by the building code committee of the city.

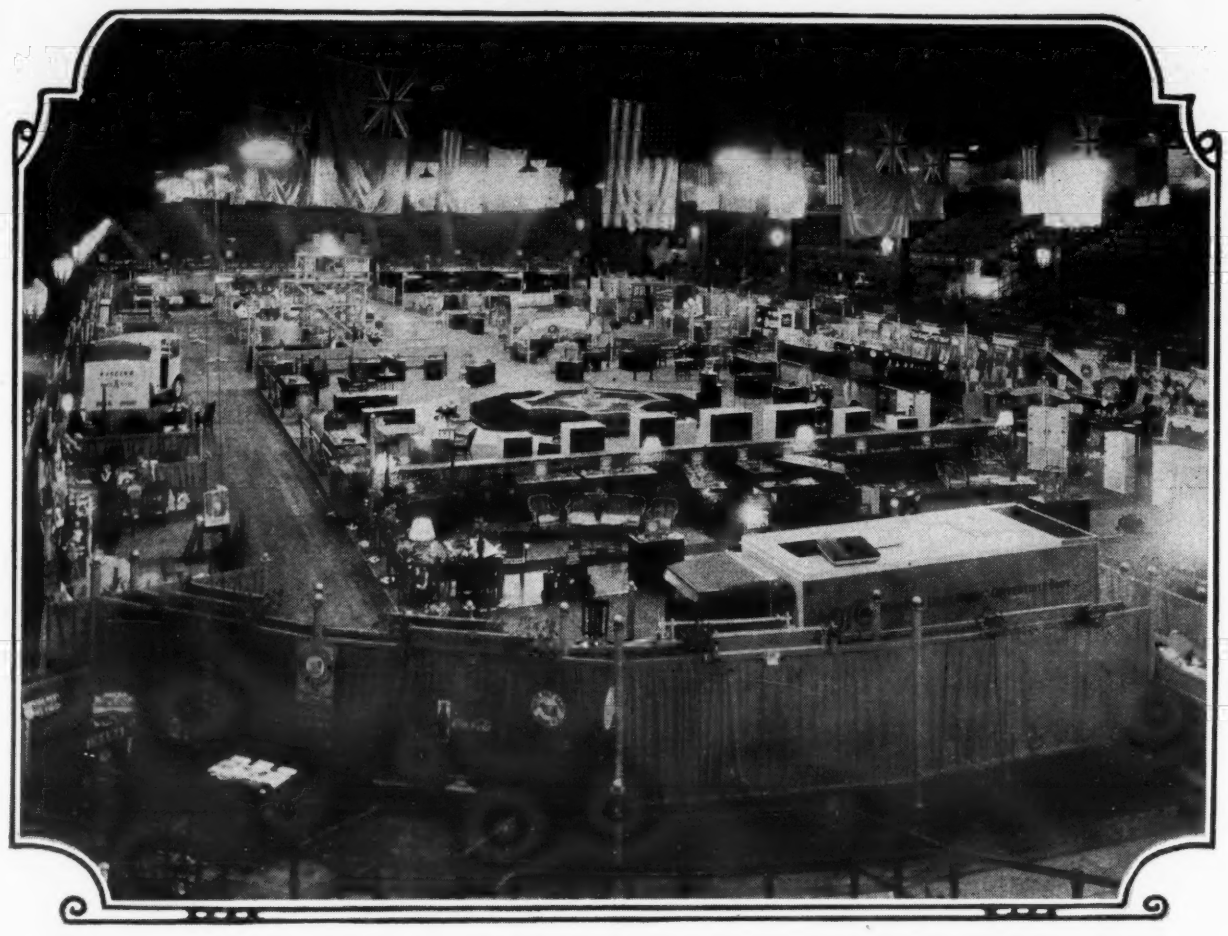
Dr. J. P. Koehler, health commissioner, has been working on an ordinance for several weeks. The building committee, which will meet in a few days, selected Dr. Koehler, Leon M. Gurda, building inspector; J. W. Hill, Electric Co. engineer; R. W. Cunliffe, director of health department laboratories; Marion Becker, Copeland Co.; J. Young, refrigerating engineer; and Thomas I. Rose, architect, to draft the ordinance.

MUFFLY TO DIVIDE TIME BETWEEN REFRIGERATION AND AIRPLANE INDUSTRIES

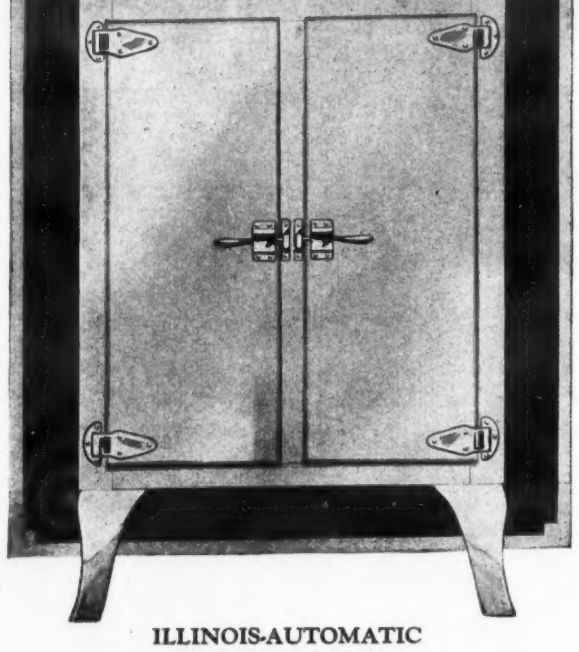
Richmond, Mich.—Glenn Muffly, consulting engineer for Copeland Products, Inc., has been appointed to the executive staff of American Cirrus Engines, through the connection between the two companies, Wm. Robert Wilson being chairman of both boards.

Mr. Muffly has located here so that he will be in a position midway between the new Copeland plant in Mt. Clemens, Mich., and the new American Cirrus Engines, Inc., Marysville, Mich.

Refrigeration Displays Dominate the Dairy Industries Exposition



General View of the Dairy Industries' Exposition in the Royal Coliseum, Toronto, Canada, October 21-26, 1929.



ILLINOIS-AUTOMATIC
TWO-DOOR MODEL

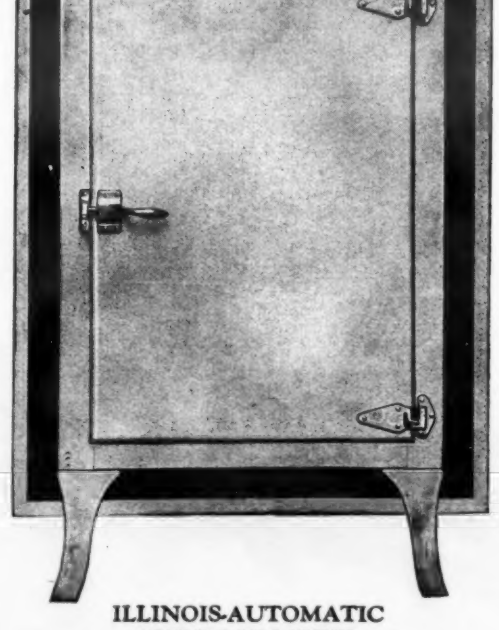
LEGS *for beauty*

Illinois-Automatic cabinets, with the New Sanitary Leg Base, immediately present an appearance of ornamental beauty. The tapered curves break the extreme squareness of line, and lend an air of finished design.

ILLINOIS-AUTOMATIC *Cabinets*
insulated with DRY-ZERO
are 15% to 25% More Efficient

LEGS *for Service*

The New Leg Base on ILLINOIS-AUTOMATIC Cabinets also makes cleaning underneath simple and easy. It elevates the cabinet to a proper height. It makes handling easier, and promotes better housekeeping.



ILLINOIS-AUTOMATIC
ONE-DOOR MODEL

Write for New Folder

Illinois Refrigerator Co.
MORRISON ILLINOIS

PREDICT REFRIGERATORS WILL HEAD APPLIANCES IN 1930 SALES VOLUME

(*Concluded from Page 1, Column 1*)

pliance to the central station in annual revenue per kilowatt of demand load.

Refrigeration will lead major appliance sales in dollar volume in 1930, Mr. Zimmerman predicted. Manufacturers' production plans are based on selling over one million units during the coming year. Mr. Zimmerman concluded by inviting a discussion of the best merchandising plans and the best methods for obtaining man power to move this great volume of merchandise.

A. C. Mayer traced the development of refrigeration in an illustrated talk, entitled "The Wandering You." W. M. Timmerman presented the General Electric products, with emphasis on the new commercial models. Three topics featured the later discussions of the conference. The first of these was the question of how to use all employees in selling campaigns. Pennsylvania Power Co., Alabama Power Co. and Rochester Gas & Electric Corp. report very favorable results from this method of selling. The general practice is to give the employee a share of the commission when the prospect is turned over to the regular salesman, but some companies are securing a larger volume by encouraging employees to complete the sale themselves and get the full commission. Alabama Power Co. reports sixty-three per cent of its volume sold in this way, while Georgia Power is one of the outstanding companies not using this plan. Next year fourteen companies plan to use employees in direct selling.

The second topic concerned sales bogies for 1930. Georgia Power has set five per cent of its customers, while Utah Power & Light puts its bogey at four per cent. Northern companies are inclined to figure on lower percentages than those in the South, because of climatic conditions.

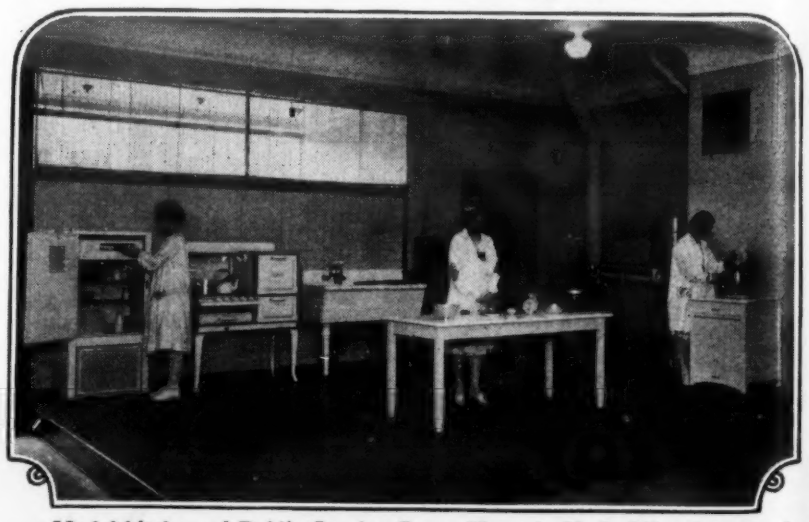
The third topic concerned partial payment plans. Eighteen companies report over fifty per cent of their sales on the installment basis, and twelve companies state that over ninety per cent are on the deferred plan. Opinion is divided between eighteen and twenty-four months as the desirable maximum term. The tendency is to grant longer terms during campaigns. It was pointed out that finance companies look upon twenty-four months as a maximum fair length. There is a great tendency to allow an extension of the second payment until March on sales made in November and December. Pennsylvania Power Co., Iowa Public Service Co., and others report success with free trial offers.

Public utility campaign methods were outlined by H. A. Pendergraph of Georgia Power Co., Mr. Ward of Associated Gas and Electric Co., G. B. Richardson of Texas Power & Light Co. Employees of the Texas Power & Light Co. are paid on a regular salary basis, and compete enthusiastically for cash prizes on a point system. All companies agree on the value of sales contests.

A. C. Mayer concluded the first day's session with a talk on campaign methods. He stressed the value of definite quotas, definite budgets and interesting contest ideas which will sustain the enthusiasm of salesmen. He promised a fund of new ideas for central station selling campaigns during the coming year. The following were present at the conference:

R. W. Hoy, Pennsylvania Power & Light Co., Allentown, Pa.
A. E. Ward, Associated Gas & Electric Co., New York, N. Y.
Harvey A. Keys, H. M. Byllesby Corporation, Chicago, Ill.
R. M. Bleak, Utah Power & Light Co., Salt Lake City, Utah.
H. S. Kirkpatrick, The Ohio Power Co., Canton, Ohio.
P. C. Tucker, Arkansas Light & Power Co., Pine Bluff, Ark.
H. F. Boehner, Midwest Refrigeration Co., Des Moines, Iowa.
T. E. Miller, Penna.-Ohio Power & Light Co., Youngstown, Ohio.
F. L. Erwin, East Shore Public Service Co., Salisbury, Md.
W. H. Sinke, Central Power Co., Grand Island, Nebr.
N. T. Wilcox, Stone & Webster, Boston, Mass.
F. W. Brack, Electric Refrigeration News, Detroit, Mich.
G. E. Fuller, Worcester Electric Light Co., Worcester, Mass.
R. C. Eaton, Chas. H. Tenney & Co., Boston, Mass.
H. J. Taillie, Rochester Gas & Electric Corp., Rochester, N. Y.
W. Nye Smith, Northeastern Power Corp., Rome, N. Y.
W. G. Keay, Associated Gas & Electric Co., Cambridge, Mass.
W. B. Stringham, Salt Lake City, Utah.
J. W. Busch, Illinois Pr. & Lt. Corp., Chicago, Ill.
J. T. Schilling, Des Moines Electric Light Co., Des Moines, Iowa.
R. E. Polk, Duquesne Light Co., Pittsburgh, Pa.
Geo. E. Whitwell, Duquesne Light Co., Pittsburgh, Pa.
M. M. Stanhope, Iowa Public Service Co., Sioux City, Ia.
R. C. Geppert, Nebraska Power Co., Omaha, Nebr.
O. A. Acuff, Illinois Pr. & Lt. Corp., Decatur, Ill.
Jack Saur, Matthews Electric Supply Co., Birmingham, Ala.
J. G. Richards, Carolina Power & Light Co., Asheville, N. C.
H. A. Pendergraph, Georgia Power Co., Atlanta, Ga.
H. G. Isley, Carolina Power & Light Co., Raleigh, N. C.
J. S. Sutherland, Alabama Power Co., Birmingham, Ala.
Frank A. Coupal, Buffalo-Niagara & Eastern Pr. Co., Buffalo, N. Y.
R. H. Knox, Birmingham Electric Co., Birmingham, Ala.
G. B. Richardson, Texas Power & Light Co., Dallas, Texas.
John A. Hine, Mississippi Pr. & Lt. Co., Jackson, Miss.
C. G. Neff, Southern Ohio Electric Co., Columbus, Ohio.
Stanley Taber, Iowa-Nebraska Lt. & Pr. Co., Lincoln, Nebr.
Ed. M. Cobb, Ohio Power Co., Canton, Ohio.
W. R. Putnam, Electric Bond and Share Co., New York, N. Y.
T. K. Quinn, P. B. Zimmerman, A. C. Mayer, H. H. Bosworth, J. M. Walker, H. W. Kumler, C. J. Enderle, W. M. Timmerman, W. J. Daily, M. F. Mahoney and J. J. Donovan of General Electric Co., Refrigeration Dept., Cleveland, Ohio.

Central Station Cooking School



Model kitchen of Public Service Corp., Newark, N. J. Miss Ada Bessie Swann has charge of the company's Home Economic Department, which sponsors 18 home economic classes. **(See story on page 4.)**

Organized Educational Service Builds Good-Will

HOME MAKING CENTER DRAWS 15,000 WOMEN TO DEMONSTRATIONS

Co-operates with Women's Clubs, No Follow-up Unless Requested

New York, N. Y.—Last March a Home Making Center was established under the auspices of the New York State and City Federation of Women's Clubs in the Grand Central Palace, Lexington Ave. and 46th Street. Its purpose was to bring together in one place a non-commercial exhibit of modern home making equipment where women can look it over leisurely without any sales pressure.

Since the opening of the Center last March, more than fifteen thousand women have visited and registered, coming from twenty states of this country, as well as from several foreign lands. They learned about this Home Making Center through their club speakers and from club bulletins. The Center itself puts out a bulletin each month called the "Home Making Center News," containing the program for the coming month and a page of state Federation news from the different clubs all over New York State.

New York newspapers have given a great deal of publicity to this new enterprise. Each Sunday the *Herald-Tribune* carries the program for the coming week on its Club page, while the *Post*, *World* and *American* occasionally print the programs.

Each club belonging to the Federation is pledged to hold one meeting at the Center each year, either a business or a social gathering, such as a card party, luncheon or dinner, as the Center is equipped to serve large banquets. A restaurant, separate from the catering department, is open every day to any one who wishes to lunch or dine there before viewing the exhibition. The hours have been arranged for the convenience of business and professional people, as well as for housewives. It is open from ten in the morning until ten at night every day except Sunday. There is no charge for admission at any time.

Each afternoon at two o'clock there is a special feature talk. These hours are allotted equally to the different departments. For instance, one afternoon the fashion advisor will talk on how to dress to suit your personality; another day it will be the turn of the housekeeping department head to tell of some new kinks in housework or to demonstrate the use of electrical equipment, such as an electric refrigerator.

Miss Faye Hamilton, home economics expert, is in charge of the model apartment with its electric kitchen. So far, three of the manufacturers of electric refrigerators have exhibited—Kelvinator, Frigidaire and Copeland. No selling is ever done, however, nor is any visitor urged to buy one make above another. A hostess meets each visitor at the elevator and takes her around the exhibit. If she expresses a special interest in an appliance, she is given a little card to fill out, with the understanding that this will be sent to the manufacturer who, in turn, will mail her catalogues or have a salesman phone her for an appointment. It is distinctly understood, however, that no salesman will call upon her unless requested. In this way, it works out that women are willing to fill out cards that in many cases have turned out to be good sales prospects. Miss Hamilton reports that during the past spring, about six out of every ten visitors expressed a desire to see the electric refrigerators and showed a keen interest in them.

During August, the Center co-operated with the summer school of Teachers College of Columbia University by offering the use of its model electric kitchen as a laboratory for the course in "Electrical Equipment." One of the lectures was on electric refrigeration and food preservation. This course was given by Dr. Robinson, of Cornell, and Dr. Lynd, of Teachers College, and its purpose was to acquaint prospective teachers of home economics with the newest electrical equipment for home use. The electric refrigerator is especially stressed in this course for its part in preserving foods at a safe temperature.

ELECTRO-KOLD CORP. SELLS TACOMA BRANCH

Tacoma, Wash.—Electro-Kold Corp., Spokane, Wash., has sold its Tacoma sales division to Tacoma Metal Refrigerators, Inc. K. A. Sandwich is the new manager of the local company. Its display rooms, sales staff and service organization are located at 741 Broadway.

Home Making Center in Grand Central Palace, New York City.

N. J. PUBLIC SERVICE APPEALS TO WOMEN THROUGH HOME DEPT.

Teaches Home Economics, Avoids Selling Effort

Newark, N. J.—On October first the Public Service Corp. of New Jersey began another year of activity in its Home Economics Department under the leadership of Miss Ada Bessie Swann. Miss Swann has ten assistants, her department covering Newark and all other important towns of northern and central New Jersey. There are eighteen classes in home economics, all of them running thirty-four weeks. A certificate of merit, or a Public Service Cooking School honor pin, is given those members who have attended regularly. The towns outside of Newark in which classes are held are: Morristown, Summit, Rutherford, Hackensack, Paterson, Jersey City, West New York, Bayonne, Elizabeth, Perth Amboy, New Brunswick, Trenton and Camden. In the smaller towns, the classes are held on one afternoon a week, but in Newark there is a class in the large lecture hall of the Public Service Terminal Building on three afternoons each week. Different subjects are assigned to the different days so that the women can hear about the one particular phase of cooking or home making in which she is most interested.

Then there are the club meetings which are specially arranged on request from women's organizations, such as parent-teachers associations, mothers' clubs, church groups, civic organizations, Girl Scouts, Campfire Girls and other organized groups.

Besides these two groups, there is the Business Women's Class in General Housekeeping and Cookery which meets every Thursday evening in Newark.

Cooking Lessons Broadcast Over Radio

In addition to the classroom work, Miss Swann broadcasts over the radio every Tuesday and Friday morning at eleven, and on Tuesday afternoon at two o'clock. Those who listen in are invited to enroll as members of the Radio Cooking School to receive the monthly menus regularly by mail. Once a month a radio party is given to which members and their friends are invited, and where various dishes are prepared and the newest ideas in home equipment are explained. These parties are hold once a month in Newark, Summit, Hackensack, Jersey City, Paterson, Somerville, New Brunswick, Trenton and Camden.

The radio is a valuable ally of the Home Economics Department. From the radio listeners they get a fine list of women really interested enough in their homes to write in for information. Notices and programs are also sent to a large list taken from the electric meter lists, from which the foreign sections and the poorer parts of the city are automatically eliminated. In these parts of the city the assistants in the department make calls and explain the use of modern equipment in the hours when they are not working in the classrooms.

The room in which the Home Economics Classes are held is a most attractive lecture hall, with a permanent set-up on the platform of a modern electrical kitchen. At the other end of the room are some graceful groupings of early American maple pieces with cheerful yellow chintz pillows and curtains at the window. Outside of Newark, the classes are usually held in a room of some church.

Food Preservation Featured Third Week in October

One whole week each fall and spring is given over to the subject of food preservation by means of refrigeration. This year the third week of October is the one designated for this subject, both in the classrooms and over the radio. The Public Service Corporation sells and installs two refrigerators — Kelvinator and Electrolux—one for electricity and one for gas. Both are used impartially in the classes and all the demonstrators are instructed in the use of each, but are not permitted to give opinions to influence the purchasing of either one. The utility company goes so far as to request that they make no attempt to learn the prices of the different models, nor anything about their cost of operation, in an extreme endeavor to keep all sales talk out of the lecture kitchen and to make its operation strictly educational in character. No follow-up work has been done from this department so that no direct results can be charted, but many sales of refrigerators are known to result from the Home Economics Department program.

In a Refrigerator

MONEL METAL

denotes Quality!

ANYTHING—whether it's a diamond or a palace—deserves an appropriate setting. You never find diamonds mounted in tin—nor Monel Metal on any but a quality refrigerator.

Whether it is used in the shape of trim, screws, corner pieces, or hardware, Monel Metal always denotes quality. For it indicates that the manufacturer is employing every available means to build long life and user satisfaction into his product.

Monel Metal is the logical material for refrigerator trim and accessories because it has a rare combination of desirable properties: an attractive, platinum-like appearance that always looks bright...easy cleanability ...rust-immunity...corrosion-resistance... steel-like strength and toughness.

Monel Metal has this additional advantage—it harmonizes with any color scheme. With no coating to chip, crack or wear off, it is natural that it would show no sign of wear after years of hard service.

With all these outstanding advantages, it's no wonder that leading refrigerator manufacturers are using Monel Metal. May we send you more information about Monel Metal for refrigerator trim—screws, corner pieces, etc.?

Monel Metal trimmed refrigerator manufactured by the BELDING-HALL COMPANY of Belding, Mich.

Advertising to Millions

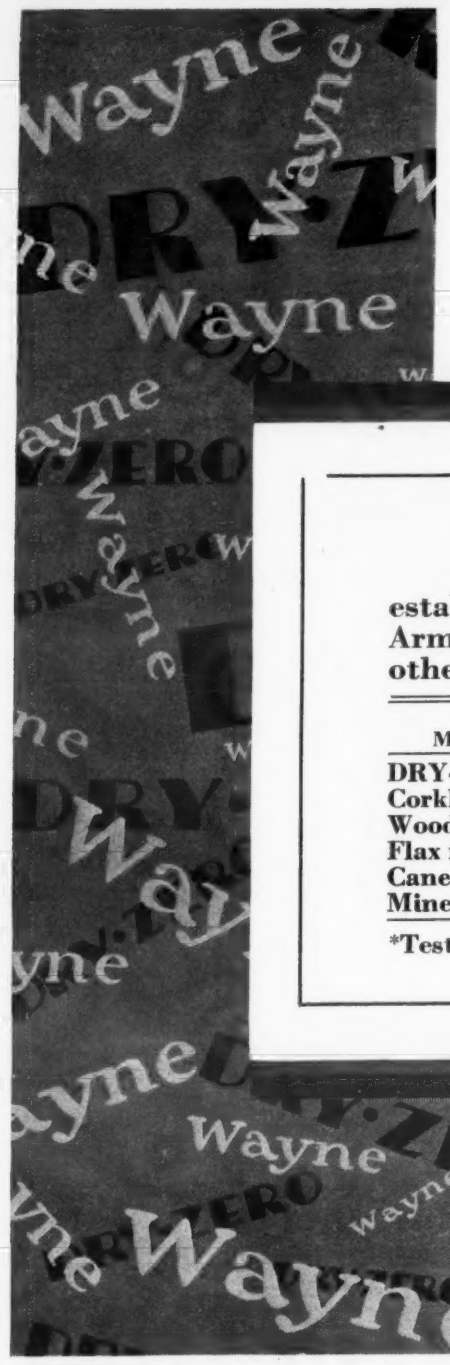
Through national advertising in magazines reaching 5,000,000 families a month, prospective refrigerator buyers are being told that the presence of Monel Metal is an indication of highest quality. Are you "cashing in" on this widespread advertising and selling effort?

Monel Metal is a technically controlled Nickel-Copper alloy of high Nickel content. It is mined, smelted, refined, rolled and marketed solely by The International Nickel Company, Inc. The name "Monel Metal" is a registered trade mark.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

MONEL METAL

DRY·ZERO



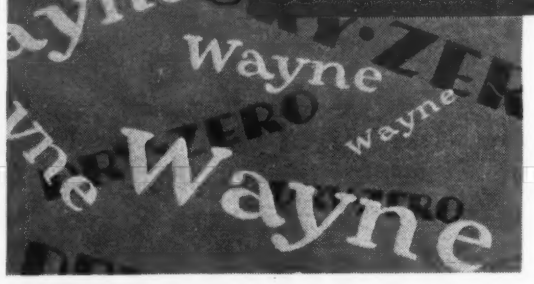
is a big factor that is being used to great advantage by our sales department."

Comparative Values

established by U. S. Bureau of Standards, Armour Institute, State Universities and other impartial authorities.

Material	Wt. cu. ft.	Insulation Value	Absorption*
DRY-ZERO	2 lbs.	4.15 to 4.3	14
Corkboard	9.5 to 13 lbs.	2.9 to 3.3	28
Wood fibre board	13 lbs.	2.9 to 3.2	115
Flax fibre board	13 lbs.	3 to 3.2	66
Cane fibre board	15 lbs.	2.7 to 2.9	78
Mineral wool slab	17 lbs.	2.6 to 2.8	

*Test run by University of Minnesota.



So say WAYNE, in commending Dry-Zero's great efficiency and superior performance.

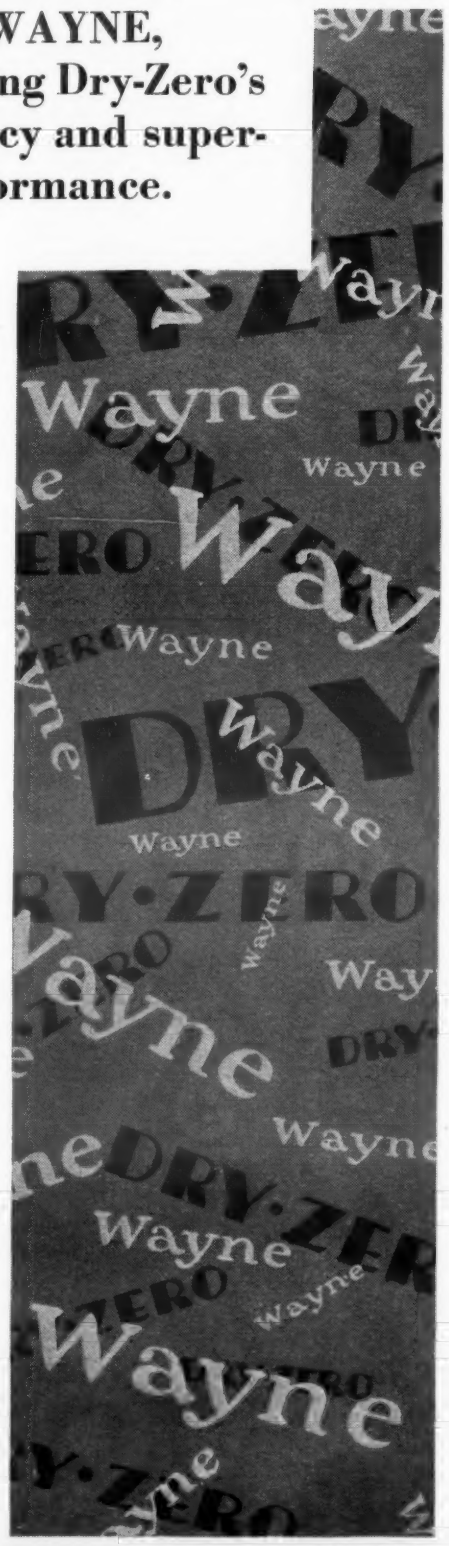
The Wayne Home Equipment Company has established an enviable reputation as manufacturers who spare neither time, money nor trouble in their zeal to produce a quality product. The Wayne Electric Refrigerator is a fitting testimonial to their genius and enterprise as progressive leaders in the field.

In regard to Dry-Zero—adopted as the standard insulation for the Wayne—they say: "Dry-Zero has reduced the running time of our Unit 17%, and that is a big factor that is being used to great advantage by our sales department. One distributor wrote us that 'It gives us an entirely new sales lever and literally lifts the Wayne out of the class of the ordinarily insulated refrigerator. We find that customers are asking more and more about *insulation* before they buy!' "

In other words, Dry-Zero, the product of years of scientific research and investigation, has established itself through actual performance. And it increases sales! Here are five definite reasons why:

(1) Dry-Zero reduces the operating time of the machine, (2) eliminates all troublesome insulation odors,* (3) permits more multiple cabinets per machine hook-up, (4) reduces weight, with subsequent saving in transportation charges, (5) *costs no more!*

From many other manufacturers, who are today capitalizing on the sales value of Dry-Zero, come almost daily reports of these outstanding advantages. To keep pace with the rapid progress the automatic refrigerator industry is now making, Dry-Zero is essential. Insist upon Dry-Zero insulated cabinets!



DRY-ZERO CORPORATION
130 N. WELLS STREET CHICAGO, ILLINOIS

**The Dry-Zero fibre, CEIBA, is standard in U. S., and other, Navy Life Jackets.*

It Helps You Sell!

DRY·ZERO

Poland Awakening to Need for Refrigeration in Marketing of Fruits and Dairy Products

Exhibitions at Warsaw and Poznan Feature Refrigeration

By Dorothy Dignam, European Correspondent

ONE of the first of the Northern countries to manifest interest in electric refrigeration, Poland today is attracting the attention of American manufacturers of electrical units, especially with regard to commercial and cold storage equipment.

The Polish Refrigeration Association, under the presidency of M. Sokolovsky, is an active body now affiliated with the Institut International du Froid. The Polish association had their 1929 convention in Warsaw during the past summer, the special theme of the meetings being "What Poland Can Do to Promote Refrigeration." The English delegation took a leading part in the discussion, as there is a fast growing commercial alliance between England and Poland.

While the young republic, because of its proximity to Russia, is regarded in western eyes as having an intensely cold climate and therefore being a third-rate prospect for any volume in the refrigerator market, Poland really enjoys a temperate climate said to be not unlike our own. Warsaw is almost on a straight line, longitudinally, with London, but Warsaw is flooded with sunshine, especially on its Southern steppes, whereas London gets the worst of fogs.

Most of the Poland populous is agricultural, and it is mainly in the produce market that electric refrigeration will be sold.

The Polish prince of today is in all reality "the big butter and egg man!" Dairy products and fine hams and bacon are already among the country's leading exports. The republican government has recently enacted legislation relative to the proper storage of these products, especially eggs. The government believes that refrigeration interests must co-operate with dairymen and pork packers in order to cultivate the luxury trade in the great food markets of Europe. England at present is the leading customer of Poland on her butter, eggs and a popularly priced brand of bacon—not the fanciest kind. Poland's exports on pork products alone have long since passed the mark of a million gold francs a year. Because of retarded shipping facilities, however, big co-operative warehouses, electrically refrigerated, are urgently needed.

Another need for cold-development in Poland is seen in the growth of the fruit raising industry in the south of the country. Here the orchardmen are striving to better their strains of plums and pears so as to compete in the great continental markets. Fruit served on the dinner tables of Paris, Berlin, and Vienna is as large, firm and perfect as though grown entirely under glass. Much of it comes from North Africa, however. Such fastidious care is taken of each piece that it is quite usual to see peaches wrapped individually in cotton and priced at 75c each in London! For Poland to enter this market with her orchard products would require refrigeration at point of picking and packing, as well as en route to the city market.

At the time this is being written there are no mechanical refrigerators being manufactured in Poland, although an American agency for one is daily expected to appear. Since Henry Ford is about to invade the country and a branch of one of America's leading advertising agencies has already opened up, somebody has evidently discovered that there is money in Poland waiting for quick circulation!

Certainly it is true that Poland is having an electrical awakening that should pave the way for mechanical refrigeration. At the Polish National Exposition at Poznan this summer and fall, the electrical exhibits fill an entire building.

THRIFT FEATURES OF REFRIGERATION APPEAL TO SCOTCH

Branch Stores in Glascow and Edinburgh Do Growing Business

SCOTLAND is much awake electrically just now. Here is located the first district to be opened up by the government-appointed Central Electricity Board. The function of this board has been to consolidate and re-equip existing central stations so that electricity might be generated on a wholesale scale and placed at the disposal of local distributing companies, who in turn sell it to the public at a fair and uniform price.

Many families that were formerly paying a high rate and getting only electricity for lighting, now have at their service an abundance of power at a lower uniform rate and the interest in owning electrical appliances has arisen proportionately.

The thrift features of electric refrigeration especially appeal to the Scotch householder. There's an old saying up here that "a Scotchman's wife is never in want, but she never has *all* she wants. When she can prove, however, that some particular want of hers will lead to a general conservation of housekeeping funds, she is more likely to have her wishes gratified. As a means of saving food, the mechanical refrigerator makes its strongest appeal.

Frigidaire, Limited, has been in Scotland for two years now, with a branch manager and display rooms in Glasgow and Edinburgh. The climate, of course, is cooler than England; the houses are still "heated" by open grates and stoves, and the need for refrigeration is not so apparent in the home as it is in restaurants and food shops, where large supplies must be preserved. A steady system of education on food-care has been undertaken, however, and on this effort rigidaire is building a slowly increasing trade.

Servel Shown at Lyons Fair

COMMERCIAL and domestic types of electric refrigerators were shown at the annual fair of Lyons, France, by Mareschal, 9 rue Vauvilliers and 204 Avenue Jean Jaures, Paris, distributor for Servel

Photo by Ewing Galloway.

A tiny gas flame takes the place of all moving parts

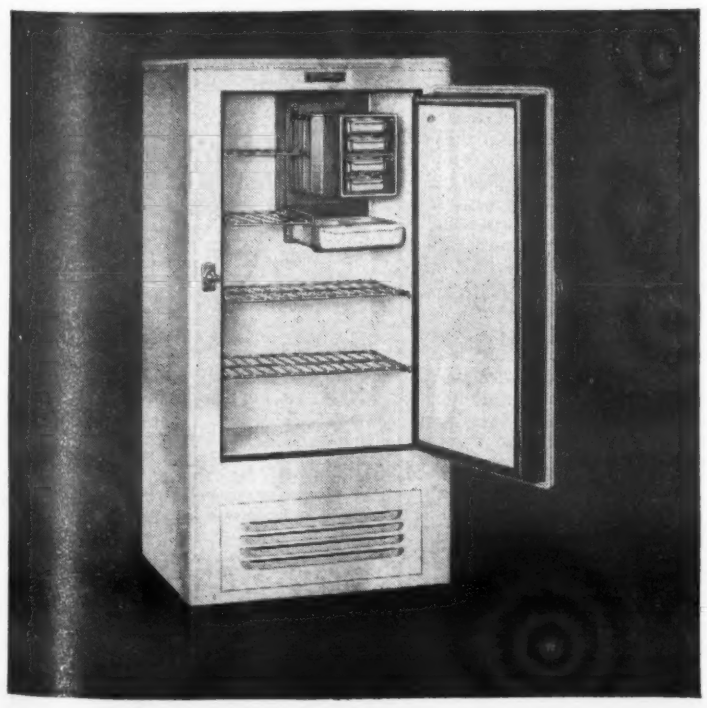
In CHICAGO ELECTROLUX Retail Sales Jump 100% during August

NOW—the second-largest metropolis in the country is "going Electrolux!" Retail Sales have leaped to a new high . . . 100% increase *in one month.* So great has been the demand for the Gas Refrigerator that another spacious new showroom is opening for the exclusive Oak Park section alone.

Notwithstanding the recent "agitation" and its effect upon automatic refrigeration, July retail sales of Electrolux increased 17% over June, and August retail sales soared to 100% over July! Chicago is turning to Electrolux because it is the most economical form of automatic refrigeration and the only system that will remain permanently silent.

This is true of other sections of the country, too. New York, California, Pennsylvania, Texas . . . everywhere . . . there's a nation-wide swing to the Gas Refrigerator.

Powerful advertising in the Saturday Evening Post, Good Housekeeping and newspapers is making Electrolux prospects every day. Your territory is full of them. The market for this outstandingly unique method of refrigeration is unlimited. In some districts Electrolux franchises can still be obtained. Get your share of this fast-increasing business. Write for full information to Servel Sales, Incorporated, Evansville, Indiana.



HERE'S THE ELECTROLUX MODEL that is so popular with the owners of small homes and apartments. It's roomy, absolutely noiseless, and makes plenty of large ice cubes.

EVERYWHERE PEOPLE ARE TALKING about the unique, noiseless Gas Refrigerator. Model shown here is the Kitchenette. 4 cubic feet food capacity. Makes 36 large ice cubes.

ELECTROLUX THE *Gas* REFRIGERATOR

G. E. DISTRIBUTOR AWARDS PRIZES TO WINNING SALESMEN

Newark, N. J.—About three hundred dealers and salesmen met with Philip H. Harrison & Co. at the Salaam Temple, 1020 Broad St., Sept. 23, for a General Electric "Open Winter" sales meeting.

During the meeting prizes were awarded to the following winners in a sales contest which lasted from June 20 to Aug. 31: R. Tracey, Plainfield, N. J., $200; Wm. Aggas, Englewood, N. J., $150; George Force, Westfield, N. J., $100; K. M. Rendall, New Brunswick, N. J., $75; J. J. O'Brien, South Orange, N. J., $50; A. J. Keilly, Paterson, N. J., $50; Ralph Eldridge, Easton, Pa., $40; Frank Klein, Red Bank, N. J., $30; R. Dutton, Red Bank, N. J., $25; W. Russell, South Orange, N. J., $25; S. H. Toy, Ridgewood, N. J., $25; C. R. Twitchell, Elizabeth, N. J., $25; and H. T. Harra, Jersey City, N. J., $25.

Philip H. Harrison & Co. recently moved into new quarters at 41 Central Ave. All offices of the company are now Housed at this location, a large show room and a Home Service Institute, fully equipped, provides for demonstrations by women's clubs and church circles. The Institute can accommodate sixty women, facilities being available for card games and other club activities that may accompany demonstrations. Miss Consuelo Kelly and Mrs. Helene Foster are in charge of the Institute.

The building also contains a sales promotion room equipped with a complete library of photographs, trade magazines, newspaper and magazine advertising, news clippings and wall exhibits of all sales promotion material.

A new club has just been organized among the retail salesmen known as the "Phil Harrison Club," the officers of which are the high men in sales for the previous month. Medal awards are granted weekly to the highest men in each sales group.

New Jersey Contest Winners Receive Cash Prizes

"Open Winter" Sales Meeting of Philip H. Harrison Co., Newark, N. J.

PRODUCTION OF TEMPRITE COOLER TO START SOON

Detroit, Mich.—Production of a new beverage cooling model will start as soon as manufacturing machinery can be set up, according to an announcement made by Liquid Cooler Corp., 6527 Russell St.

Manufacture of this equipment was not to have started until early in 1930, but pending orders from South America and the results of a conference between Herbert C. Kellogg, Liquid Cooler Corp., and J. M. Sierra, assistant chief engineer of J. Lyons & Co., Ltd., London, England, caused the decision to begin production immediately.

J. Lyons & Co., which controls 270 restaurants in England, have ordered a quantity of the new beverage cooling models for the purpose of cooling soda water and beer. Nearly 200 of their restaurants now have Liquid Cooler Temprite equipment.

The heat transfer of the new Temprite beverage cooler, which has three coils, each 30 ft. in length, is approximately 133 B. T. U. per sq. in. per hour, or about 15,000 B. T. U. for each coil. This model will supply approximately 30 gallons (each of three different beverages) an hour, reducing them from 80 degrees to 40 degrees.

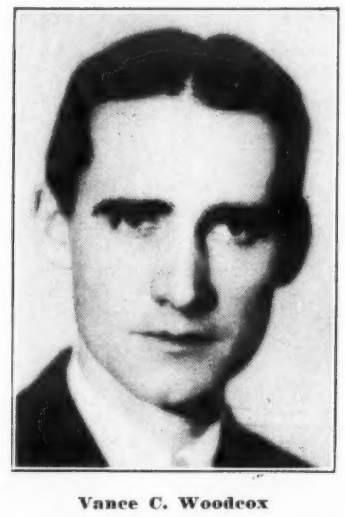
BETTER SPECIFICATIONS FOR INSULATION URGED

(*Concluded from Page 1*)

been given it in the past, especially from a heat loss standpoint, rather than a thickness standpoint. He believes that it is possible to advance to a stage where better insulation can be had at a lower cost.

The discussion of this paper considered some of the problems in determining how to construct and erect insulating materials so that a minimum moisture absorption results. Mr. H. W. McPherson told of several experiments that he had performed in connection with protecting materials against the entrance of moisture. One interesting instance was the case of a hermetically sealed steel box which did not entirely eliminate moisture. Another point of interest in the disclussion was that the color of the surface of refrigerator walls had very little effect on heat transfer at refrigeration temperatures.

DOMESTIC SALES MANAGER



Vance C. Woodcox

Detroit, Mich.—Vance C. Woodcox, who has been connected with Kelvinator Corp. for the past four years, was, on October 1st, made domestic sales manager. This promotion comes as the result of service in connection with special domestic sales development. For the past six months, Mr. Woodcox has been devoting his entire time to the practical application of certain principles of house to house salesmanship.

Through these tests of new ideas in training and putting domestic salesmen on a paying basis in a shorter time, Mr. Woodcox has developed an educational course for retail salesmen and introduced new presentation and approach talks that have resulted in greatly increased returns for Kelvinator outlets that have put the plan into effect. Mr. Woodcox's first position with Kelvinator was in the sales department, where his aptitude for research work soon won him the position of district sales manager. Previous to his connection with Kelvinator, he was with the Standard Oil Co. at Detroit, where his duties included the training and supervision of salesmen.

CENTRAL STATION GIVES BUFFET KELVINATOR AS GOLF PRIZE

Binghamton, N. Y.—Dr. W. B. Aten, champion of the Binghamton Country Club, brassied and putted his way to the title of "champion of champions" in a match on his home links Sunday, Oct. 13, and won for his prowess a buffet Kelvinator donated as a prize by the Binghamton Light, Heat and Power Co., Kelvinator distributors. Dr. Aten was opposed by the champion of the Kalurah, E. J. Workers, and Vestal Hills clubs.

World Wide Publication

"Continued success to your instructive and world wide publication."—Ralph Searle, Kelvinator, Ltd., London, Eng.

BERRESFORD NAMED MANAGER OF NEMA TO SUCCEED WALLER

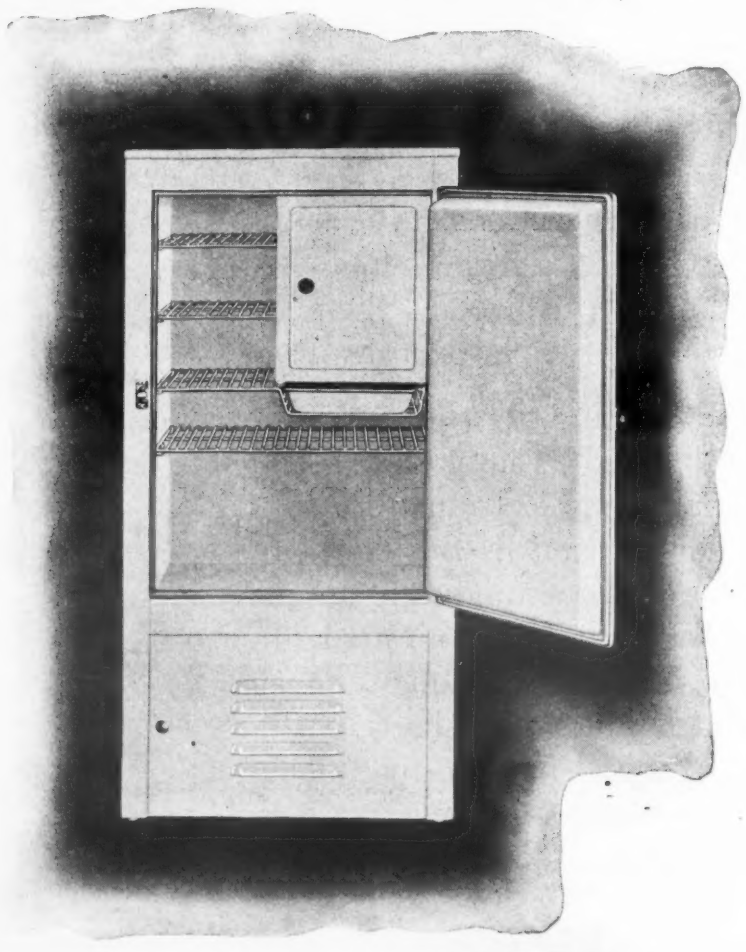
A. W. BERRESFORD, president of the American Engineering Council and for many years prominently identified with the electrical industry, has been named managing director of the National Electrical Manufacturers' Association, to succeed Alfred E. Waller, resigned. Mr. Berresford brings to his new executive position an extensive knowledge of electrical and general engineering and a broad background of experience in industrial enterprises. For some two years following the completion of his technical education, obtained at the Brooklyn Polytechnic Institute and Cornell University, he undertook some general engineering work similar to that in which the average graduate engineer engages. His first significant connection was as designer with the Riker Electric Company, which was followed by a connection with the Ward Leonard Electric Company, where he had charge of testing and designing. Two years later, in 1898, he, with two others, purchased the assets of the Iron Clad Rheostat Company from the receiver and formed the Iron Clad Resistance Company, of which he became vice-president and manager. When this organization was purchased by the Cutler-Hammer Manufacturing Company in 1900 Mr. Berresford entered the engineering department of the latter company. In 1901 he was made superintendent, one year later secretary, and in 1905 general manager. It was in 1907 that he was named vice-president and general manager, a position he occupied until 1923, when he resigned, feeling a need for rest from business pursuits.

Mr. Berresford again became actively identified with the electrical industry in 1926, when he became executive vice-president of the Nizer Corporation, following the consolidation of that organization with the Kelvinator Corporation and the Grand Rapids Refrigerator Corporation, operating as divisions of the Electric Refrigeration Corporation. In the summer of 1927 he severed his connection with the refrigeration branch of the industry, when he resigned as vice-president of the Electric Refrigeration Corporation in charge of engineering and development.

The electrical industry has always been prompt in recognizing the eminent services of Mr. Berresford. During the war he was chairman of the General War Service Committee of the Electrical Manufacturing Industry, and was in addition chairman of the General War Service Committee of the Electrical Manufacturers of Electrical Supplies. He is a past-president of the American Institute of Electrical Engineers, the Electrical Manufacturers' Club, the Associated Manufacturers of Electrical Supplies and a member of the American Society of Mechanical Engineers, the Society for the Promotion of Engineering Education, and of other technical associations.—*Electrical World.*

REX *sets the pace*

REX Cabinets have earned an enviable name for beauty of appearance and unusual value, the result of honest and careful construction



Quality... at Low Price

Increased demand has brought about important economies in production. In accordance with the invariable policy of the REX Manufacturing Company, they have passed these savings on to their customers.

The REX Model LP4, as featured, is of steel construction and has four cubic feet net food storage capacity, full porcelain lining, lacquer exterior and satin finish hardware. It is now offered at an amazingly low price with corresponding reduction on companion Models LP4-S, LE4 and LE4-S.

Rex
THE COMPLETE LINE OF MECHANICAL REFRIGERATION CABINETS

Complete, detailed specifications, together with the price schedule applying to these models, will be sent upon request.

REX MANUFACTURING COMPANY
Connersville, Indiana, U. S. A.

Electric Refrigeration Distributors and Dealers

You need the PEERLESS line of compressors.

PEERLESS units give you a COMPLETE line, ranging from one to ten tons.

PEERLESS Perfected Multiple Apartment System is recognized leader in its field. Full details given on request. Our record warrants your most exacting investigation.

PEERLESS ICE MACHINE CO.
515 W. 35th Street
CHICAGO, ILLINOIS

The leading refrigerator manufacturers are buying

BOSLEY'S
"Ice Saver" Gasket
for it is the best uniform quality insulation
Write us
The D. W. Bosley Company
1901 Carroll Ave. Chicago, Ill.

THEY'RE TOPPING
Last Year's Record

Salesmen are making 1929 *the greatest year* for GENERAL ELECTRIC Refrigerator

TOP-NOTCH retail salesmen all over the country are boosting 1929 sales for General Electric Refrigerators to new heights. Lively contests in distributors' territories are responsible for big volume orders. The race for membership in the 1930 Toppers Club is on! Through the Toppers Club the General Electric Company recognizes sales ability and merit.

These are Toppers

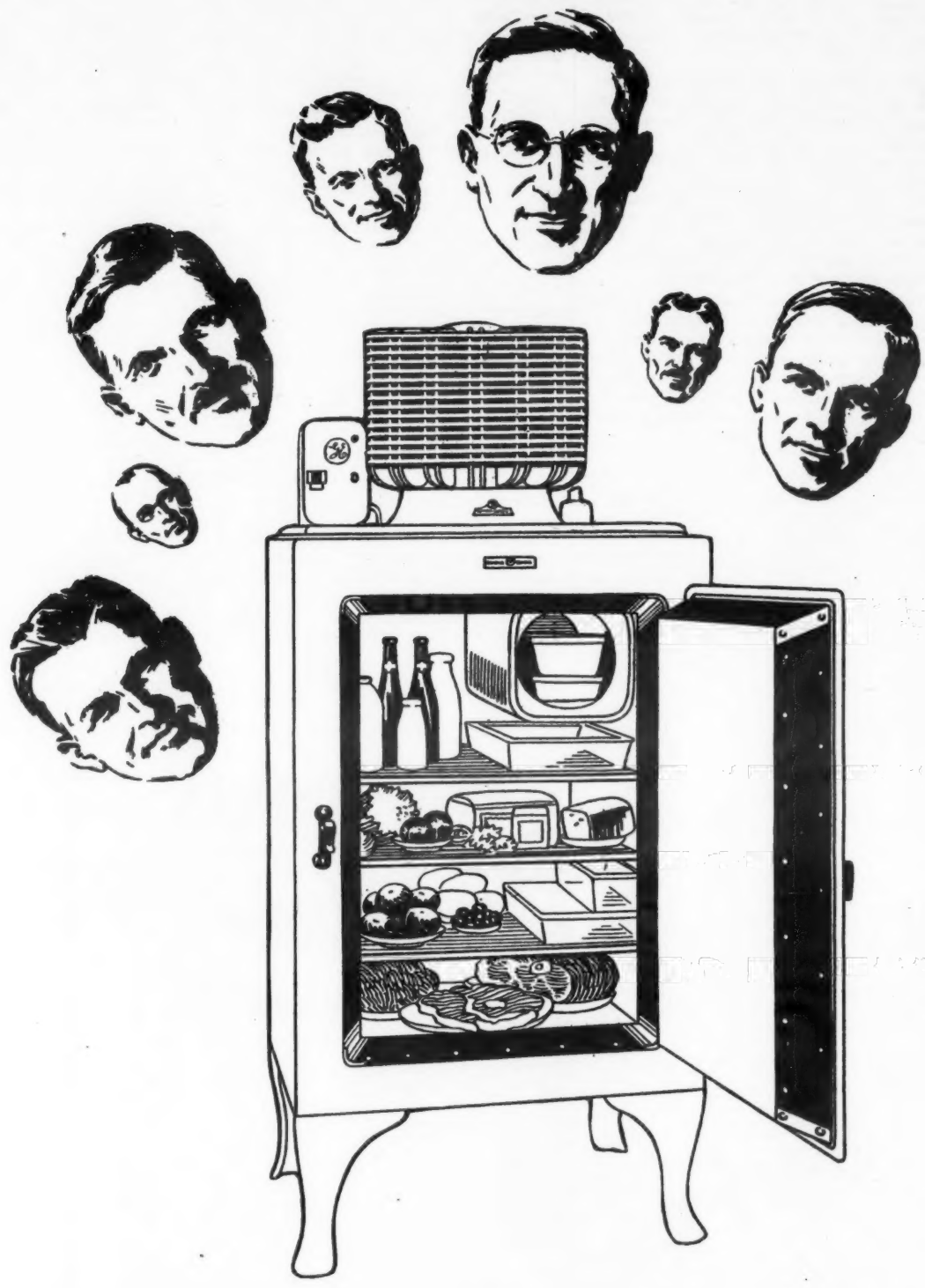
The Toppers Club offers various business, social and insurance benefits to three grades of salesmen:—

1. JUNIOR CHAPTER MEMBERS—men who reach their monthly quotas.
2. TOPPERS—those who top their quotas and attain a certain high level of sales for the whole year.
3. CABINET MEMBERS—the "Big Guns"—topmost Toppers in each of the distribution areas.

Why They're on Top

They sit on the top of the world, these Toppers! They work hard. They may not be superior in intelligence or natural ability—but they're everlastingly putting forth extra effort on the job.

They *like* to sell General Electric Refrigerators. And they *like* the General Electric Organization. They have an almost unlimited market before them because nearly everybody wants an electric refrigerator and only 6.4% of the people of this country have one. They know the preference for General Electrics is nearly twice as great as for any other make. They know they have the best product in the field to push.



This is the Refrigerator Toppers Sell

Its record stands absolutely unequalled—more than 350,000 now in use and not one owner has yet paid out a single dollar for repairs or service in over two and a half years.

The General Electric Refrigerator is the *only* one that has all its mechanism mounted on top, hermetically sealed with a permanent supply of oil—trouble-proof to an almost unbelievable extent—the only one with an *accessible* freezing regulator—that is of all-steel construction. It was designed by the greatest electrical research and manufacturing organization in the world—General Electric, whose very name is a guarantee of service and dependability.

A great crew of men putting over the most outstanding success in the history of modern refrigeration!

GENERAL ELECTRIC
ALL-STEEL REFRIGERATOR

ELECTRIC REFRIGERATION DEPARTMENT OF GENERAL ELECTRIC COMPANY, HANNA BUILDING CLEVELAND, OHIO

Safety Regulations Discussed at Fire Chiefs' Convention

NEW JERSEY CHIEF TALKS TO FIREMEN ON REFRIGERATION

A paper on refrigeration read by Chief Charles A. McGinley of East Orange, N. J., at the International Association of Fire Chiefs' Convention, held at Birmingham, Ala., October 22, 1929.

MECHANICAL refrigeration is relatively new; its principals have been known for many years, but the application for a considerable time was confined to laboratory and school room demonstrations. Forty years ago the industry was not extensive; cooling and refrigeration depended upon the collection and use of natural ice, cut from the ponds and streams, and shipped to various parts of the country.

The first extensive use of mechanical refrigeration was in ice plants, and the refrigerant used in these was ammonia. Today the most extensive development is with this refrigerant in large ice plants and cold storage buildings, but other liquids and gases are being brought into use and many types and kinds of machines are being introduced.

Briefly, the most common process of mechanical refrigeration is as follows:

A gas is liquified by compressing it, during which process heat is generated; this heat is carried off by cooling with water in the larger machines, and by air cooling in some of the smaller ones.

The liquified gas is conveyed to an evaporator, which is an enlarged section of piping or some special appliance where the pressure is reduced and the gases are allowed to expand; in this expansion, heat is taken up by the gas from the surrounding walls, thus cooling them. The gases pass back to the compressor and the cycle is repeated.

Another but less used system, consists of absorbing a gas in a liquid, through the application of pressure, which sometimes is simply heat applied to a special vessel. When the pressure is reduced and the gas liberated, heat is absorbed from the walls of the container and refrigeration obtained. Beside ammonia, there are several other commonly used refrigerants. Each refrigerant has its special characteristics and has its disadvantages from either the fire hazard or the life hazard. Any of them in too great a concentration will reduce the oxygen content below the point where human life can be sustained. It is well recognized that dilution of air more than 15 to 25 percent results in smothering a person.

With the exception of carbon dioxide, all other refrigerants have other characteristics that are dangerous. They group themselves into two general classes; those that are irritants, toxic or anaesthetical, which means that they are harmful to varying degrees when breathed, and those that are flammable or readily burnable. Some have both characteristics.

Ammonia is extremely soluble and produces a great amount of heat when brought into contact with water. This is the reason that all firemen dread to come in contact with ammonia when their clothing is drenched with water. Ammonia is used to a small extent at present in household refrigerating machines. It is used by Electrolux.

Methyl chloride has very little odor, what it does have is slightly sweetish, like chloroform. It is somewhat inflammable and when mixed with air is explosive. The explosive range is rather narrow and therefore it is not considered particularly dangerous. Methyl chloride is not readily detectable in small quantities and on this account, there is a great amount of chemical research work being done to obtain something which can be added to it so that its presence in case of a leak may be detected. This refrigerant is used by Servel, Absopure, Copeland, Savage and many other smaller manufacturers.

Isobutane is another refrigerant which is used to a limited extent in household refrigeration. It is not used in larger quantity on account of its inflammable and explosive properties. This refrigerant is used by Copeland.

The refrigerant in most common use in household systems today is Sulphur Dioxide. It is used in about 85 to 90 percent of all household refrigeration systems. It is used by the larger manufacturers such as Frigidaire, Kelvinator, and General Electric. Sulphur Dioxide is a chemical that is made by burning ordinary sulphur and compressing the gas to a liquid. It changes to a gas at 14° above zero. It is not inflammable or explosive when mixed with air in any proportion. It has the characteristic odor of burning sulphur. It is soluble to some extent in water and can be cleared out of any place by flushing with water. It is absorbed so slowly that there is no danger of firemen being scalded even when exposed with wet clothing.

In recent years there has been a very rapid and steady introduction of mechanical refrigeration. Numerous manufacturers have developed household refrigerators, office water coolers, ice cream and other containers, soda fountain coolers; beside these there is a growing use of cold storage for all kinds of commodities, for fur storage and in connection with artificial cooling in manufacturing processes and for places where people live, work or play.

This increase in use has resulted in many forms of systems of which there are two general classes, known as the direct and the indirect. As indicated by the name, the first consists of piping the compressed refrigerant to a point where refrigeration or cooling is to be used, while in the indirect system the refrigerant is used to cool a brine or other low freezing solution and this is piped to the point of use. The direct has the disadvantage of having the refrigerant, which as stated above, is nearly always of an irritant or flammable nature, carried through walls, partitions, etc., from one room to another. The most general system of this kind is the "multiple system," used to supply several apartments or rooms in an apartment house. Others, usually called "commercial" systems, having the same general characteristics of piping the refrigerant from one compressor to several evaporators and are found in stores, restaurants and florists shops. The principle hazard of such a system is from the probability of leaks. It is for this reason that rules are necessary to assure a first class job of piping, and one that will not be readily injured by workmen and others in the building. Another requirement is the installation of suitable valves to permit the ready cutting off of any section in which leaks occur.

The indirect method is objected to by many people mainly from the maintenance standpoint and greater first cost. To cool a given area, it takes twice as much surface with the indirect system as with the direct. Brine pipes corrode readily and must be replaced. The advantages are, that the refrigerant can be kept to a part of the building cut off, by suitable partitions or doors, from those parts occupied and used by people. Larger installations can thus be used without endangering life and property.

The newness of direct refrigeration has resulted in its hazard being over emphasized, and the tendency is to restrict or prohibit its use. This in time, will pass away, in much the same way that the hazard of kerosene lamps, natural and commercial gases and electricity are no longer looked upon with the fear which existed when they were first introduced.

There are certain kinds of occupancy, where direct refrigeration may be questionable for the next few years, except with systems using caroon dioxide (Co2). These places are theatres, hospitals, asylums and similar places where people are confined or are in large groups; likewise in first floor halls of offices and factory buildings and on subway platforms. No complete prohibition should be made for such places but care should be taken in the location of refrigeration units and in the running of pipes. In most of these places, indirect refrigeration would be preferable.

There is need with refrigeration, as with practically all industries and arts, for complete installation regulations and for suitable testing of the equipment. Also some provision must be made for an adequate inspection service, and for proper equipment of the fire department to handle such materials without danger to the firemen.

In the large individual ice plant, or cold storage place, there is little need of special precautions. These plants are usually isolated, although cold storage plants may be in a congested wholesale section. In the buildings themselves, there are few people employed so that the life hazard is not an important consideration.

With these larger systems, which generally use ammonia or carbon dioxide, the operating pressures are high and therefore a first class grade of workmanship is required, or else there will be gaskets blown out and other defects will arise. Complete valving of the system is necessary to prevent much leakage in case of a break, and also to permit repairs without shutting down the whole system.

With any system where gases are under pressure there is a danger of a pressure rupture due to a failure of some part to function, or to the heat generated by a fire. Therefore devices are necessary in these larger systems, and in most of the smaller ones, which will shut the machine down in case of excess pressure; also other devices, such as a safety valve which will blow from high pressure. Some use a frangible disk, which will blow out, and others provide a fusible plug which will melt in case of a fire.

Any large refrigeration plant should have provisions for shutting down the machinery without going into the room, as the gases which would come from a break, would prevent entering the room without an oxygen helmet. The New York City regulations and those recommended by the Society of Refrigerating Engineers provide that each plant of large capacity should have an oxygen helmet located near the entrance so that it could be reached and used in an emergency. Where ammonia is used, it is desirable in case of trouble on the system to have a valve so located that the gas in the system can be discharged to a body of water.

Many hotels are installing extensive refrigeration systems. The simplest form is a small ice-making plant usually located in the basement. From this, extensions have been made so that now most large hotels have refrigerators, coolers and other devices, located in different parts of the building and supplied either with brine or direct refrigeration. Because of the life hazard, the indirect method is preferable for buildings of this character. The refrigerating plant should be located in a separate room or in a room in which other machinery, such as the pumping plant, is maintained but it would be preferable not to have it in the same room with electric generators or where the boiler room is located, as many of the gases used for refrigerating are of an explosive nature and a leak may result in an explosion if the point of ignition is available. Hotels are also supplying ice water to rooms and putting in artificial ventilation. The tendency will be to use direct refrigeration for this purpose because of the relative cheapness of this method. It is inadvisable to use the direct method in connection with the cooling unit of

(Concluded on Page 15, Column 1)

A Refrigeration Grade of METHYL CHLORIDE

widely preferred for its many IMPORTANT ADVANTAGES

USE ARTIC FOR
Household
Absorption
Ice Cream Cabinet
Cold Storage,
Apartment and
Florists' Refrigeration

BECAUSE ARTIC IS
Non-corrosive
Non-irritant
Only slightly toxic
Only moderately inflammable
Operates at high efficiency
Volumetric displacement is low

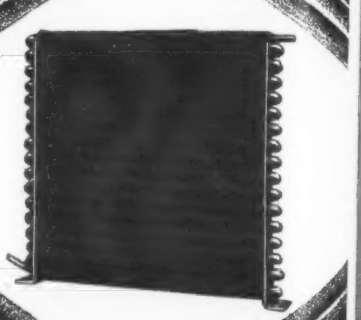
ARTIC is another R & H Chemical specialty. That establishes its purity and dependability. Full information is contained in the above illustrated booklet. We shall be pleased to send a copy to possible users.

R & H also manufactures other Refrigerants

The ROESSLER & HASSLACHER CHEMICAL CO.
10 East 40th Street, New York, N. Y.

McCORD BUILT CONDENSERS

Type "B" Spiral Fin Continuous Coil McCORD CONDENSER
The popular "bee hive" condenser designed to occupy a minimum of space. It is installed so that all air currents created by the fan pass over the coils giving great capacity with a small amount of tubing.



Type "A" Double Row Spiral Fin McCORD CONDENSER
Adapted to the larger refrigerating units used commercially and for apartment house installations. This condenser is made up of seamless, bright annealed tubing with continuous corrugated spiral fin that has made McCord condensers leaders in the field.

Type "A" Triple Row Continuous Tube McCORD CONDENSER

McCORD RADIATOR & MFG. CO.
DETROIT MICH.

Ice-O-Thermic Tubes

News of Importance

to all Electric Refrigeration

Dealers

See Saturday Evening Post, issue of November 23 (pages 56 and 57) and Electric Refrigeration News, November 20, for an announcement of vital importance to every dealer selling electric refrigeration.

3 in 1

New Discoveries

New Advancements

in

ELECTRIC

REFRIGERATION

DAIRY REFRIGERATION CO. SUCCEEDS GLENN-KLANN

Milwaukee, Wis.—Glenn-Klann Mfg. Co., 311 Sixty-fourth Ave., has been incorporated, with added resources, under the name, "Dairy Refrigeration Co."

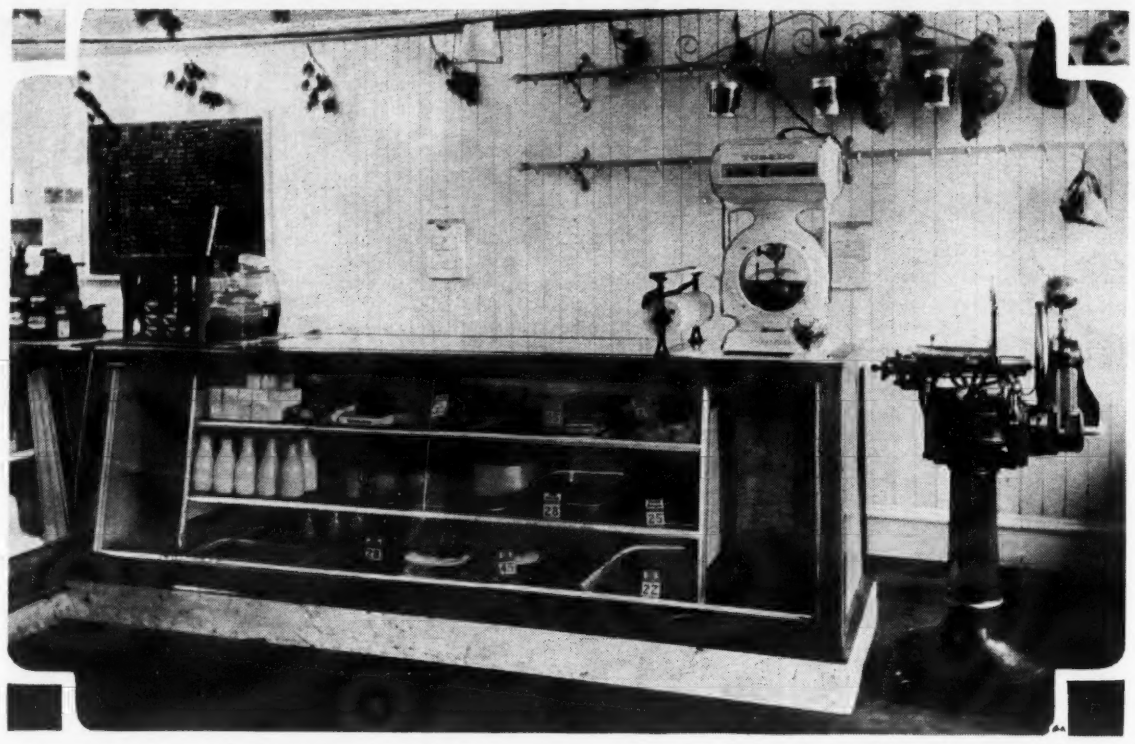
The new corporation is manufacturing refrigerating equipment for the farm, and the following models are included in its line: model "B" Glenn dairy icer. cooling capacity 30 cans or 2,000 lbs. of milk daily; Glenn fox farm installation, model "B," cooling capacity equal to 900 lbs. of ice melting daily and capable of cooling rooms up to 12 ft. x 12 ft. x 12 ft.; Glenn commercial unit, model "C," capacity equal to 350 lbs. of ice melting daily and is built for small butcher boxes and counters; commercial unit, model "A," capacity equal to 2,000 lbs. of ice melting daily, built for large dairy, creamery and florist rooms; kitchen cooler, model "D," is adapted to domestic installation.

COPELAND EQUIPMENT IN TWO TELEPHONE BUILDINGS

Detroit, Mich.—Copeland equipment has just been installed in two telephone buildings in New York and Pennsylvania. Copeland Model LC water coolers are being used on all floors but one of the new building of the New York Telephone Co. at Syracuse. On the sixth floor, because of an excessive load demand, a Copeland MC water cooler was used. The installation was made by the B. I. Cooper Sales Co., Inc., Syracuse distributors.

In the new exchange building of the Bell Telephone Company of Pennsylvania at Ogontz, Pa., a Copeland-Spear ice water generating system, using a Copeland Model R condensing unit, was selected to serve five drinking fountains.

Display Case is Butcher's Silent Salesman



Ten foot full vision display case installed in meat market by Downing Mfg. Co., Downing, Wis.

LIQUID COOLER PREPARES WATER COOLING TABLES

Detroit, Mich.—Tables, that reduce figuring on the part of salesmen, have been prepared by Liquid Cooler Corp. to simplify installation problems.

These tables show the capacities of different refrigerating units when hooked up with Temprite coolers. The tables are based on varying temperatures of inlet water, and the condensing units are rated in number of persons each will serve under various conditions.

As an example, if a salesman sells a water cooler, he can give an accurate quotation on the complete installation cost by noting the temperature of incoming water, the number of people to be served, and the condensing unit that will supply the load of these two requirements.

FIVE DEALERS DISPLAY AT OMAHA PURE FOOD SHOW

Omaha, Nebr.—Mechanical refrigeration was prominently displayed at the Pure Food Show staged in the city auditorium, Oct. 14-19. Five refrigerating companies were represented at the show, General Electric, Baker Ice Machine, Kelvinator, Electrolux and Frigidaire.

Storz Electric Refrigeration Co., Nebraska distributors for General Electric, displayed seven domestic and commercial boxes and had five refrigerators in operation in food booths on the floor of the hall. Several sales were made and a number of prospects secured.

Nebraska Power Co. showed a number of Kelvinator models, electric ranges and clocks.

Drinking water for the attending crowds was cooled by Baker Ice Machine Co., which kept an ice-making machine in operation throughout the show.

Metropolitan Utilities Co. had two models of Electrolux on display, both machine were hooked up and in actual machine being hooked up and in actual operation.

Meat cases and counters manufactured by Omaha Fixture and Supply Co. were shown using Frigidaire equipment.

GEORGIA TECH ENGINEER DISCUSSES CODE

Atlanta, Ga.—A meeting of the National Association of Practical Refrigerating Engineers was held at the offices of the Refrigeration Publishing Co., 502 Walton Building, October 16. Professor F. C. Stewart, of Georgia Tech, spoke on the subject of "Analysis of the A. S. R. E. Safety Code." George Ponall, president of the Association, presided.

SWEDISH ENGINEER INSPECTS SERVEL LABORATORY

Evansville, Ind.—Tore Elfving, an engineer from the Electrolux laboratory in Sweden, is visiting the Electrolux Servel laboratory in New York and will shortly visit the factory here.

$20,000 FACTORY ADDITION PLANNED BY FRIGIDAIRE

Dayton, Ohio—Alterations and addition to plant No. 1 of Frigidaire Corp. will cost $20,000, according to a building permit issued Oct. 17. Plant No. 1 is located on Taylor St. at the B. & O. railroad. The addition will front on Amelia St.

WILLIAMS DEMONSTRATES SYSTEM IN CHICAGO

Chicago, Ill.—E. T. Williams, consulting engineer for Servel, Inc., New York City, demonstrated his safety system for multiple refrigeration installations to the special industry committee at the Chicago Avenue Pumping Station, Tuesday, November 5, and will make a similar demonstration to the Health Committee of the Chicago City Council on Wednesday.

The apparatus consists of thirty evaporators connected with a compressor. Four taps are provided to represent leaks, and provision is made for accurately weighing the refrigerant which leaks out of the system during each test.

Safety devices include an alarm which sounds when the valves operate, and means for automatically shutting down the machine. Two tests made Monday demonstrated that the system will operate successfully within the maximum leakage limit.

NEW METHODS EXPEDITE STRAWBERRY SHIPMENTS

More than 100,000 barrels of strawberries were packed by the "cold-pack" or "frozen-pack" method in 1928, according to George M. Darrow, senior pomologist of the U. S. Department of Agriculture. This amount is the equivalent of from 4,000 to 5,000 carloads of fresh berries in crates, he says. Handling strawberries in this way is the outstanding development of the industry in recent years, Mr. Darrow states.—*Ice Cream Trade Journal.*

BRUNSWICK-KROESCHELL NAMES N. Y. AGENCY

New Brunswick, N. J.—Brunswick-Kroeschell Co. announced, Nov. 1, that its refrigerating equipment will be distributed in northeastern, central, and western New York state by Cooney Refrigeration Co., Inc., 493 Franklin St., Buffalo, N. Y.

Branches for sales, service and parts have been established at 221 Walton St., Syracuse, N. Y., and 357 McClellan St., Schenectady, N. Y.

E. R. Cooney, president and general manager of Cooney Refrigeration Co., has been western New York representative for Brunswick-Kroeschell Co. during the past seven years. J. Leo Cooney, vice-president of Cooney Co.; B. F. Andrews, M. T. Firestone and H. L. Jennings, who have also been members of Brunswick-Kroeschell organization over a period of years, will assist E. R. Cooney.

HOT-N-KOLD RETIRES FROM RETAIL FIELD

San Francisco, Calif.—Hot-N-Kold Corp., Kelvinator distributors, have moved to new quarters at 339 Bryant St. This company has retired from the retail business and are now selling strictly wholesale. The new offices, new display rooms, a new shop, warehouse and shipping departments are all under one roof.

C. H. Dickey, Jr., president of the Hot-N-Kold Corp., is now in Europe. Charles Meredith is general sales manager.

EAST AND WEST EXCHANGE SEA FOODS

Seattle, Wash.—The San Juan Fishing & Packing Co. is now exchanging the foods of the Atlantic for the foods of the Pacific. This service has now been launched by means of an iceless refrigerator car.

The first shipment, some fourteen tons of Nordic fillet of haddock from the Atlantic Coast, has been received here in a car manufactured by the Safety Iceless Refrigerator Company. Sulphur dioxide is used as the refrigerant. The car was returned to the Atlantic Coast packed with Pacific packed with Pacific Coast halibut and salmon.

WHICH ONE
will mention insulation first?

WILL the salesman invite attention to the insulation in his refrigerator? Or will he wait until the customer asks him? If the insulation is corkboard, you may be sure he will talk about it for he knows that cork insulation is a sales help, a powerful argument for quality.

Most refrigeration salesmen know the record of corkboard in the cold storage field. They know that the meat-packers, the ice cream plants, the creameries, and all the rest of the great refrigerating industries have adopted corkboard as standard—after 25 years of testing all kinds of insulating materials. They know that corkboard is the proved insulation. And, knowing these facts, they put confidence and enthusiasm into selling cork-lined refrigerators.

The efficiency of Armstrong's Corkboard Insulation insures uniform temperatures at low operating cost. It conserves the life of the machine by reducing the running time. Furthermore, Armstrong's Corkboard retains its efficiency indefinitely because it remains dry and is not subject to progressive deterioration. The cork-lined cabinet will be as well insulated 10 years from now as the day you sell it.

Through long and efficient service, Armstrong's Corkboard has won the complete confidence of the refrigerating industry—the confidence that puts power into your selling talk.

Armstrong engineers are at your service for any insulation problems and to give you full information about corkboard. Write the Armstrong Cork & Insulation Company, 917 Concord Street, Lancaster, Pennsylvania.

Armstrong's Corkboard Insulation

For Household and Commercial Refrigerators

M.&W.Co. 1876 LACQUERS ENAMELS

A Lacquer Finish that Has Stood the Test

M & W REFRIGERATOR LACQUER ENAMELS

A Quality Reputation on these products has been established through actual large quantity production on Cabinets widely distributed throughout the world. Another complete M & W Finish including either Lacquer or Oil Primer followed by M & W Lacquer Enamel in White or Colors.

We invite your correspondence regarding your particular problems.

MAAS & WALDSTEIN CO.

Executive Offices and Plant, 438 Riverside Avenue
NEWARK, N. J.

Chicago Office and Warehouse
1115 Washington Blvd. West

Los Angeles Office and Warehouse
1214 Venice Blvd., Los Angeles, Calif.

NEW >> A Heavy Duty Refrigerator Display Case By McCray

EXCLUSIVELY for machine refrigeration of any type and to meet present day demands for striking display coupled with maximum utility and efficiency, the new No. 3108 Heavy Duty Refrigerator Display Case has been created by McCray.

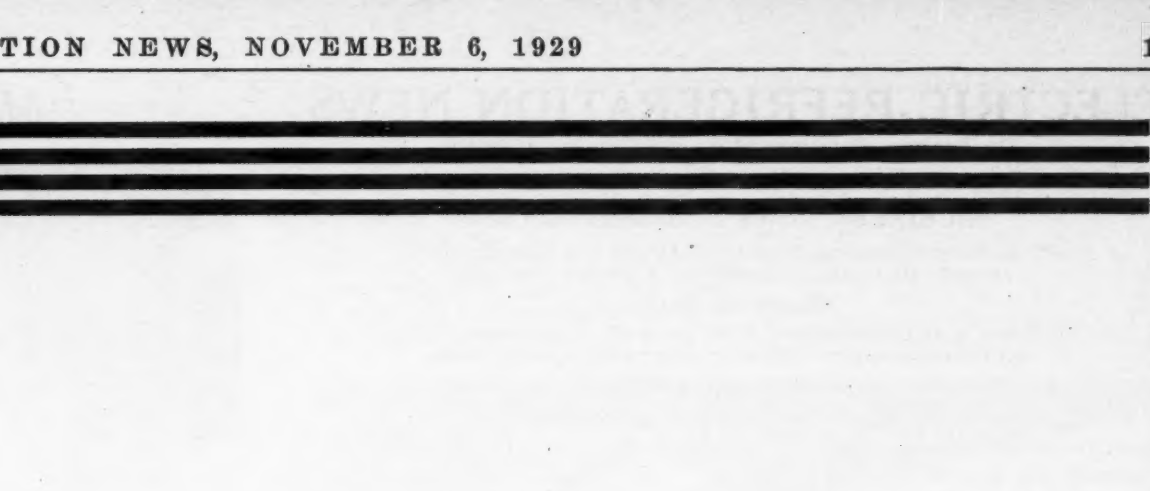
The No. 3108 Case embodies new and unusual features of design, and is a superior contribution to up-to-date refrigerator equipment. Its staunch 6-inch walls are insulated with 4 inches pure corkboard sealed with hydrolene. A display front and top of three courses plate glass permit unobstructed vision. Snow white enamel interior. Quarter-sawed oak exterior with white porcelain panels in front and on top. Handsome base of 9-inch olive porcelain.

Typically McCray in sound construction, splendid appointments, finished craftsmanship, this very practical case provides needed equipment for food merchants everywhere, who have learned through experience to depend on McCray for profit-building service.

Dealers in mechanical refrigeration know that the efficient working of their machine depends upon the refrigerator itself. With the installation of their units into a McCray they are assured of certain, permanent service. In the new No. 3108 Case, coil spaces at either end provide for any type machine.

McCray builds refrigerators for every need and purpose, both stock and order models. Write for catalogs and information. No obligation to you, of course.

McCRAY REFRIGERATOR SALES CORPORATION
Dept. 66, Kendallville, Indiana
SALESROOMS IN ALL PRINCIPAL CITIES (See Telephone Directory)



Shown above is a front view of the new No. 3108 Heavy Duty Refrigerator Display Case. Note the beauty of the case, combined with the practical construction—three courses of plate glass in front and on top, snow white enamel interior; rich oak exterior, porcelain panels, olive porcelain base. A mark of distinction for any store!

In the rear view, shown above, may be seen the four large storage doors which give ready access to contents, speed up service and sales. Coil spaces at each end available by plug doors shown. Heavy metal bar shelf. Metal floor rack. Measurements of the No. 3108 are 8′ x 36″ x 44″.

McCRAY REFRIGERATORS

WORLD'S LARGEST MANUFACTURER OF REFRIGERATORS FOR ALL PURPOSES

ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Refrigeration Industry

PUBLISHED EVERY TWO WEEKS BY

BUSINESS NEWS PUBLISHING CO.

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Service

AN indication of additional opportunities for the News to be helpful to its readers is given in suggestions received from subscribers as they renew their subscriptions. A blank is provided for this purpose on the return coupon of expiration notices. One topic is mentioned more frequently than all others, namely, "more information for service men."

We take pleasure, therefore, in calling special attention to the digest of the "Ailments of Refrigeration Systems—Their Symptoms, Causes and Remedies," together with the Refrigerator Service Man's "Trouble Finder" Chart which appears on pages 16 and 17 of this issue. The center spread was used for this article and chart for the convenience of many subscribers who will want to detach the sheet and post it in their service department shops.

We have been actively aware of the demand for more service information, and have made continuous effort to increase the proportion of editorial matter on this subject. We have found some difficulty, however, in securing the desired material. Service men, it appears, are not given to writing about their interesting experiences, or at least they do not express themselves as freely as do salesmen.

Engineers, connected with the manufacturing companies, who should be most fully informed regarding all service requirements for their products, are evidently quite reluctant to admit the existence of such problems. Possibly they feel that any need for service is a reflection upon their own ability to design trouble-proof equipment.

While everyone in the industry knows that great strides have been made in recent years in the design and production of electric refrigeration equipment, the fact remains that there are many thousands of units in operation which do not have these later refinements. While manufacturers have effected a marked reduction in the average number of service calls per machine per year, the service departments still have the responsibility for the satisfactory operation of older machines.

Now that the well established manufacturers have attained a feeling of confidence that the future demands for service will not be a serious liability, it appears reasonable to suggest that the time has arrived to admit the necessity for service on systems installed during the pioneering period of the industry. Widespread knowledge of service methods will further reduce the problem as far as the manufacturer is concerned.

Regardless of the dearth of articles dealing directly with service, the News has been giving service men a great deal of most valuable information bearing indirectly on their problems. Much space has been devoted to news concerning the development of regulations governing the installation and testing of equipment with a view to its value to service departments as well as to the executive, engineering and sales departments. In doing this we have approached the problem of service at its source, namely, the proper installation of the original equipment.

In publishing the various drafts of proposed national and local safety codes, together with the discussion by engineers and public officials, we believe that the News has given the industry an exceedingly clear picture of all the viewpoints which influence legislation affecting refrigeration and the various possibilities for accidents which may occur as a result of improper installation methods.

No doubt many installation men, reading local safety rules for the first time, wonder how so many complicated instructions could ever be conceived. Readers of the News, however, who have followed the arguments which have taken place in various cities, particularly in Chicago, during the recent months, will readily understand that every word and figure of a code has a meaning and that no restriction is added to the list until it has been battled over by all interests concerned.

It is noteworthy that readers have found no cause to complain regarding the adequacy of reports covering these code activities. Some individuals, it is true, have argued that such matters should not be discussed before the rank and file of the industry. The News has maintained the position that the industry is entitled to the fullest possible information on so important a subject, and that the best interests of the industry will be served by accurate knowledge of all essential facts.

"Mother Hubbard Needs No Cupboard"

NO, this isn't a Hallowe'en display because it comes from Frigidaire in Great Britain, where Hallowe'en revelries are completely overshadowed by the great Guy Fawkes Day, which comes five days later. This is a Mother Hubbard idea, appropriate for any time of year. The suggestion is based on the following adaptation of the old nursery rhyme, which is lettered on the card in front of the refrigerator:

"Old Mother Hubbard had a cupboard,
The fable says 'twas bare;
But Mother Hubbard needs no cupboard
Since she got her Frigidaire."

ICE MEN WORRIED BY COMPETITION OF MECHANICAL UNITS

[An editorial from *Refrigerating World*, October, 1929.]

IF there was ever a time in the history of the ice industry when the presence of every man, who is taking his livelihood from this industry, is urgently needed at conventions of ice men, it is now. Conditions in the industry are undergoing such rapid transformation and competition has gotten such a foothold in refrigeration territory, that every man should attend his national and state conventions to participate in the deliberations which will take place and to have his say as to the policies that will be adopted.

The biggest ice selling period of the year has ended, and many firms report increases in sales over last year. The majority, however, seem to report 1929 as just an average year, for the increasing tonnage which has been enjoyed in the past years was not evident this season. Many attribute this failure to show progress to the increasing competition of mechanical units. Those manufacturers who are entirely satisfied with sales this year, however, raise the question as to the number of years that satisfactory business will be experienced. In other words, will the ice business return a satisfactory profit, say, ten years from now if manufacturers of mechanical units continue to place their product into homes at the rate they have been selling them in the past.

The answer to this question can probably be found in an address that is scheduled for presentation at the Eastern Ice Association convention, under the heading of "New Markets for Ice."

Without doubt many sales of automatic refrigerators have been made, and some people are inclined to say that the majority of them have been so made, because the housewife was dissatisfied with the type of service rendered by her ice man. Along this line another topic for consideration at this convention will bring out much valuable material for the ice man who is interested in the future of his industry. The topic is "Should the Ice Manufacturer Sell Direct to the Consumer or Through Dealers?" Those two subjects are no doubt typical of the discussions and papers that will be given attention at most of the state gatherings of ice men.

The National Association of Ice Industries meets in Boston in November. Secretary Leslie Smith, elsewhere in this issue, mentions a few of the highly important problems that must be solved at this meeting. He calls attention to the antiquated duplication of ice delivery, which runs up the cost of ice to the consumer. He asks: "Will commission control help to correct this condition?"

There is the question of the type of advertising copy to be used in national advertising. While the executives and men handling this work have stood for ethical, dignified advertising, many members prefer more militant copy to combat automatic competition. At Boston you will be given an opportunity to express your desires on this point.

Should the Trade Development Bureau be permitted to prepare advertising material for use of members locally, devoted to some local problem, or be restricted to some fixed national advertising policy? This question must also be answered at Boston.

The $250,000 National Advertising Campaign was not fully supported during the past year. What is to be done about this most important matter next year? "The finances of the National Association are in deplorable condition," says Mr. Smith. What is to be done about this?

No matter from which angle this convention is considered, it holds much of intense interest to every ice man and the entire ice industry. Every man should be in Boston when the convention gets under way, and then follow this up with attendance at his state association convention.

MODERN BUSINESS PROFITS FROM LOSS OF TRADE SECRETS

[An editorial from *Printers' Ink*, October 31, 1927.]

TO those of us who are in a position to watch the progress and observe the psychology of many lines of business, it becomes increasingly apparent that nowadays there virtually is no such thing as a trade secret. And through the loss of its secrets, business gains.

In production, the management is foresighted that converts its mechanical discoveries into matters of public record by covering them with patents. Thus the discoverer stakes out his claim, and the law, rewarding his enterprise, protects him as he mines his profits. The law's protection enables him besides to display publicly the innermost virtues of his product—to advertise the processes of manufacture that enable him to produce so good a product at so low a price.

To the abolishment of secrecy, advertising itself contributes in still another way. Advertising is the medium through which the public is being informed, not only of the qualities of products, but of managerial policies. The annual report to the stockholders is becoming at once a report and an advertisement, and the management's advertising is beginning to broadcast information that, in earlier and less enlightened times, was imparted guardedly to a little ring of insiders.

To be sure, there still are business men who talk darkly of business secrets. In general they are men of two types.

One is the type that permits conditions to develop that, when revealed, cause untold embarrassment. To these, it seems not too much to hope, inferential enlightenment may come from distressing examples recently revealed in Washington.

The other is the type that believes that the releasing of information about an enterprise's workings or about its policies will either "help competition" or weaken the enterprise's standing with its trade. In this group belongs the executive who the while he guards so jealously his shadowy "secrets," knows full well that competition, through the grapevine channels of trade, very likely is informed already of his plans and purposes.

And as to the trade, we quote from an address delivered by Walker D. Hines, president of the Cotton-Textile Institute, Inc., at the institute's annual meeting in New York on October 16. Early in his address Mr. Hines plunged into the subject of over-production. He urged the compilation and the use of statistics. And then this:

> We frequently encounter the argument that if you get up statistics, the buyer will know about them, and then you are worse off than you were before. But I believe that if you don't have statistics, the buyer has some uncanny method of knowing anyhow that your situation is bad, and acting accordingly; and that, without statistics, the buyer knows more than the mill man. . . . It is also true that often, without statistics, the buyer, perhaps from the obvious example on the part of the mills for orders, exaggerates the situation and thinks it is worse than it really is; and if the mills would compile statistics, they would find that the situation was not nearly so bad as they were led to believe.

And thus, as this business leader sees it—and as other leaders see it also—a policy of secrecy not only defeats its own ends, in that it fails to keep secrets secret, but it gives rise to strategic disadvantages and economic evils.

"OPTICAL ILLUSION"

POLAR WAVE ICE & FUEL CO.
Olive and Grand
Saint Louis

October 4th, 1929.

Electric Refrigeration News
Detroit, Michigan.

My copy of Electric Refrigeration News of September 25th, has been received and, having read your editorial with interest, was impressed with your humane attitude and apparent spirit of tolerance; but upon reading further, I found your publication of an excerpt from the "E. O. W. page" of Advertising and Selling rather inconsistent with your editorial and questioned whether you were suffering from an optical illusion.

I was reminded of the old French Fable of Mirrors, one a flat and the other a convex mirror and each classifying the other as a deceptive one. The dispute was at white heat when the great French mathematician D'Alembert, chanced to pass.

"My friends," said he to the quarreling mirrors, "you are both right and wrong. You both reflect objects according to the law of optics." He admonished them not to call each other madmen because "you do not record the same reflection of things."

I will be guided by his advice, but I cannot refrain from commenting on the anonymous accusation that the average ice man is "incompetent and insolent." This statement is cowardly and wholly without foundation and its publication casts a reflection upon your journal and the industrious youth of our Commonwealth, who serves the public courteously, honestly and tactfully, and has the respect of the American household.

True, many kinds of customers must be served; numbering among them are the pleasant, the silent, the technical, the superstitious, the hot headed and argumentative types. The last type takes to an argument like a duck to water, and to successfully deal with this type, it is necessary to satisfy his hunger for argument without letting the argument degenerate into personalities. If we choose, I am sure we could thus classify this anonymous author.

Neurotic behavior has practically lost its news value. Modern journalism frowns upon such tactics and besides, figuratively speaking, those who introduce poisonous gas must expect to inhale it later. The ice industry's publications disclose an honest presentation of its attitude.

T. J. BECK,
Mgr. Appliance Dept.

NEW JERSEY CHIEF TALKS TO FIREMEN ON REFRIGERATION

(Concluded from Page 10, Column 5)

a ventilation system because of the possible injury to people sleeping in the rooms; even a carbon dioxide system would introduce a possibility of suffocation although not of toxic poisoning.

A subject not to be overlooked and though somewhat foreign to the average Fire Chief, is yet of sufficient importance to call attention to at this time. That is;—the methods of installations, hazards to be guarded against, and grounding, especially of the portable isolated installations with regards to the life hazard; of the electrical part or parts of this work. I understand that there are electrical committees now working on this subject and our consideration and co-operation may help to bring about a safer standard, as, afterall, it is the Fire Chiefs who have to meet the emergency when these plants go wrong.

One might suspect that the ordinary electrical code is liable to take care of this part of the work, but the vagaries of these heretofore little used refrigerants, create extraordinary conditions seldom met with in the past. As set forth previously in this paper, some of the refrigerants used are of an explosive nature and therefore, arcing or sparking of the electrical parts, whether accidental or through the normal functioning of the apparatus, gives use to a serious condition.

In the case of the isolated installations, the unit is usually incased in a non-metallic material, or in any case it is generally found on a wood, linoleum or similar floor. They are also usually in or near a kitchen where there is a likelihood of the existence of exposed and grounded piping. Here enters the life hazard. Should the insulation of the electrical carrying parts break down and a person come in contact with them and any grounded fixture, the result can be fatal, as statistics show.

In the contemplation of any code covering electrical refrigeration, the writer does not profess to be sufficiently versed to know how to treat the electrical part of this subject, yet believes that it concerns the Fire Chiefs enough to have it incorporated in such a code by those better informed on the subject.

A very extensive use of refrigeration is developing in small meat markets, florist shops, grocery stores, and in connection with fur storage. These plants are generally small and consist of a compressor of 100 to 300 pounds capacity, supplying one or two evaporators. The more common class have used ammonia but a number of other refrigerants are now being developed for plants of this kind.

In my city, there are many hundred multiple installations in apartments with as many as twenty boxes to a compressor. Up until recently the party making the installation could install the piping, compressors, etc., just as he pleased, resulting in many poor installations, often requiring the attention of the fire department, to stop leaks because of poor workmanship. Copper tubing was exposed from the basement to the apartments, through dumbwaiter shafts, in fact through any part of the building that was convenient, without any regards to the safety of the tenants. It was tied up with strings, bent sharply around corners, could be hit by ladders or other things carried by the janitor and had joints at any place convenient to the installer. This was done with one thought and no other, the cheapness of the installation, in order to get the contract from competitors. Naturally, I was very anxious about these installations and started making inquiries among other chiefs in this section.

Not finding any regulation for the installation of multiple refrigerators in buildings, the subject was brought before the New Jersey State Fire Chiefs' Assn. early in 1928. A committee was appointed by President Greenfield of this Association, to look into the advisability of getting suitable regulation for the proper installations of all refrigeration machines. The committee consists of myself as Chairman, Chief John Towey of Newark, N. J., Chief James McMilan of Orange, N. J., and Leon A. Watson of the Schedule Rating office, Newark, N. J. Many meetings were held on this question. Geo. W. Booth, A. C. Hutson, and H. E. Newell of the National Board of Fire Underwriters, gave their hearty co-operation to the committee, for which we are very thankful. It was decided by all concerned, that some regulations should be drawn to safeguard the tenants in the building housing multiple systems of refrigeration.

The result of this work has been the preparation by the National Board of Fire Underwriters of a code of installation for multiple refrigeration systems. You have all read news articles of the situation in Chicago, and will probably hear much of it in the next few months. My advice to you is to remember that this is an age of keen competition and much that is said and done in Chicago, can be laid to a trade fight, where one side or the other would like to have its competitor restricted by a law or ordinance. In our city we are getting multiple installations installed in accordance with the regulations of the National Board of Fire Underwriters, and are holding off passing an ordinance which will cover all systems, big and little, until the National Board of Fire Underwriters issued an ordinance which its engineers believe suitable.

Use of this code assures the proper installations of multiple systems. It provides for the location and protection of the compressor, the protection of the copper tubes in solid and flexible conduit, the suitable fastening of refrigerators, proper valving, etc.

All multiple systems should be tested and listed by the National Board of Fire Underwriters before they are permitted to be installed. If this system is followed in all cities, a uniform installation will be obtained which will reduce to a minimum all hazards and safeguard the health and lives of firemen and apartment house dwellers.

The progressive fire chief will fortify his department with the necessary equipment, masks, etc., to properly handle all refrigerants now used in ice-machines in times of emergency. This work can be handled by regular companies of firemen properly equipped, but should be done preferably by special companies specially trained for this work. Like the oil burning heaters used extensively today, the artificial ice-making machines are here to stay and will have to be recognized by all fire chiefs as part of the regular fire department work in emergencies. Firemen are always called when a leak develops in any building housing mechanical ice machines. At least I find it so.

My experience has been that regardless of whether the gas would escape from the individual unit or the multiple system, it is always necessary to wear a mask to enter the building. I believe that all agree that all refrigerants should have some kind of an irritant in them as a warning to the tenant, especially while sleeping, in order that they would at least wake up and have a chance to escape. This would apply to all gases that are known to be dangerous to life.

I am of the opinion that a general discussion of this whole subject should be taken up at this convention, in order that the best expert advice could be had on the hazards to life if there are any in order that the chiefs in turn could take back to his department, the proper methods of handling this whole situation which is constantly arising in every municipality.

IOWA FRIGIDAIRE MEN MEET

Spencer, Iowa—Thirty Frigidaire dealers of northwest Iowa met at the Tangney Hotel, Oct. 21, for an all day convention, at which factory representatives and district officials, from both midwestern division and Sioux City headquarters, directed a school of instruction. J. F. Kirk, of Kirk Sales Co., 131 W. Fourth St., took an active part in arranging the program and in the accommodation of visiting dealers.

EXTRA DRY ESOTOO
THE PUREST
SULPHUR DIOXIDE
Analysis Guaranteed
WE HAVE AN AGENT, WITH OUR PRODUCT IN STOCK, NEAR YOU — WIRE US WHERE WE CAN SERVE YOU
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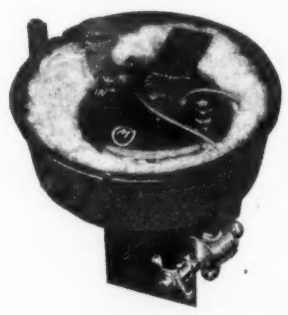
300 COLD DRINKS

Now a new principle of water cooling (liquid to liquid) makes it possible to take care of peak demand with a unit so small that it is built completely into the head of the bubbler fixture. This construction eliminates refrigeration losses—each drink is instantly cold at the bubbler. The actual heat transfer capacity of Model 22 Temprite is 180 tons (ice) a year.

FROM ONE BUBBLER

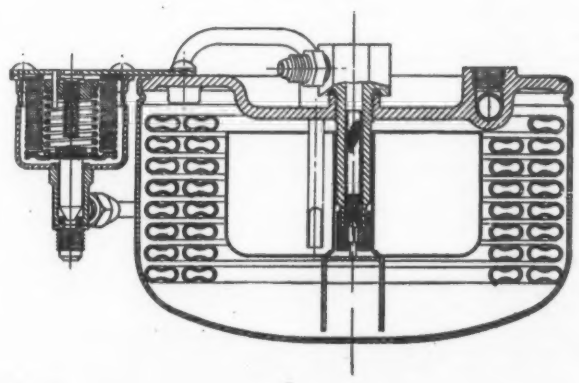
This is an amazing record for a bubbler. The high efficiency of Temprite enables any standard compressor to deliver from 75% to 100% more work. It enables you to serve heavier traffic with fewer fixtures. It enables you to install fixtures in smaller spaces. It means elimination of water waste. It means economy of employees' time.



IN ONE HOUR FOR 1c

High refrigerating efficiency, fewer fixtures, less space, easier installation, combine to give an average operating cost of less than 6c per hundred gallons. This is a new record. Three hundred large, uniformly cold drinks are delivered in one hour at a total expense of 1c.

The Temprite units and fixtures come in a variety of commercial and art models, wall, niche and pedestal styles—all adaptable to SO_2 or CH_3CL. The prices range from $108.50 up f. o. b. Detroit.



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REFRIGERATION SERVICE

Ailments of Refrigeration Systems—their Symptoms, Causes and Remedies

By B. A. Johnson

THE most important question a refrigerator serviceman should ask himself is—"How can I do the best possible job with the least expense to my employer? In other words, how can I make the owners of refrigerators that I service, satisfied customers; so satisfied that they will advertise to their friends and neighbors how well their refrigerator works, what a great convenience it is, and how easy it is to adjust when some little thing goes wrong, which very seldom happens."

To me, the best answer to this question is, "Give prompt, courteous and efficient service at all times. Know the machine you service or install, and know it in such a way that you can detect and anticipate possible troubles that might occur and eliminate them before the machine becomes a nuisance to the owner and an expensive service cost to your employer. Appreciate the customer's pride of ownership, and the problems and policies of the sales department.

With this thought in mind, I have prepared a service chart which is designed to aid servicemen to detect and correct possible troubles that might occur on small compression type of refrigerating machines. Its main purpose is to aid the serviceman to make an intelligent analysis of troubles when they do occur and thereby accomplish one of the most important features of good service. In order that the chart may be made clear to everyone, the following definitions are given:

General Ailment—The general ailment may be considered as what is wrong with the machine as determined by what the owner says, what the serviceman notes from the nature of the request for service, and what he decides is wrong from his own general observation. It is very important that the general ailment be well understood and carefully determined before further investigations are made.

Particular Symptoms—The particular symptom may be anything that is not normal in connection with the operation of the machine, which can only be detected by test gauges or close observation with respect to temperatures of the various parts and visible indications, such as frost where it should not be, no frost where it should be, sweating lines, etc.

Cause or Causes—The cause or causes given in the chart are the reasons for the conditions existing as defined under general ailment and particular symptoms.

Illustration—You have had a headache for some time and decide to call a doctor to find out what is wrong. The *headache*, to him, is the general ailment, which may have one of several causes. The doctor takes your temperature and pulse, asks you a few pertinent questions and from these *particular symptoms* decides what is the *cause* and prescribes a remedy.

You are called out to service a refrigerator and find out from what you can see and from what the owner tells you that the machine has been running steady for two days and is keeping the refrigerator too cold. That is the *general ailment*. You put on the test gauges, take the temperature of the chilling unit and find the suction pressure much below the normal cutout point and the chilling unit temperature below normal. From these *particular symptoms* you decide the *cause* to be that the automatic control is stuck or set too low.

System Referred To—For the benefit of service men, who are probably familiar with only one type of compression refrigerating system, a little detail on this subject will be given. There are substantially only three types of vapor compression systems, namely:

1. Flooded system with a high side float valve.

2. Flooded system with a low side float valve.

3. Dry system using an expansion valve or a fixed orifice.

Before we take up these differences let us consider, briefly, the four main steps in the cycle of refrigeration by vapor compression.

1. **Evaporation** of a liquid refrigerant in a container which is placed in the chilling compartment of a refrigerator and is substituted for the cake of ice. The refrigerant boils to absorb heat, whereas the ice melts to absorb heat.

2. **Compression** of vapor formed from the evaporation or boiling of the refrigerant into another container called a condenser.

3. **Condensation** of the vapor which is pumped into the condenser. The vapor pumped out of the evaporator (expansion coils) becomes hot by compression and when its temperature reaches a point above the cooling medium (room temperature air, or water) it loses heat and changes back to a liquid.

4. **Regulation** of the liquid formed in the condenser back into the evaporator, where it starts the cycle all over again.

The "System Referred To" in the chart has only to do with the method of the liquid refrigerant from the condenser (usually called the high side) to the evaporator (usually called the low side or expansion coils) and the method of controlling the temperature in the refrigerator. Thus a *high side float, pressure control* system means that the regulation of the liquid refrigerant from the condenser to the evaporator is done by means of a flat valve in the high side of the system and the cutting on and off of the machine is controlled by the pressure of the refrigerant in the low side of the system. The *low side float, pressure control system* has its regulation accomplished by means of a float valve in the low side and the cutting on and off of the machine controlled by the pressure of the refrigerant in the low side. The *dry system, thermostat control* has an expansion valve which *regulates* the high pressure liquid form from the condenser to the evaporator by allowing only as much as will give a certain predetermined pressure on the low side of the system. This pressure can be changed by adjusting the valve. Thermostat control means, as the word implies, that the operation of the machine is controlled by the temperature of some part of the low side equipment such as the brine in the chilling unit, surface of the chilling unit, and temperature of the return line at the evaporator outlet.

NOTES AND HINTS

The following notes and hints are given in connection with the chart so that the troubles as stated under *cause or causes* may be more clearly understood. These notes are numbered to facilitate easy reference.

I. COMPRESSOR

A.—**Function**—The function of the compressor in a refrigerating system is to remove the vapor formed in the expansion coils of the chilling unit and force it into the condensing coils. In the condensing coils the vapor reaches a high temperature and pressure due to compression, gives up heat and changes back to a liquid. If the compressor is not functioning properly with respect to speed and efficiency, it surely cannot do its share of work in the refrigeration cycle. Any fault in the compressor which causes a reduction of the amount of refrigerant displaced will result in increased running time of the unit. In extreme cases the unit may operate continuously and still not circulate enough refrigerant to produce adequate refrigeration.

B.—**Test for Efficiency**—A simple test for compressor efficiency is to pump up a pressure on the compressor head (use a high pressure gauge and close discharge shut-off valve all the way to the right) by turning the flywheel a few revolutions by hand. A good compressor will build up a substantial pressure with a few revolutions and keep it there when you stop turning the flywheel.

If the pressure pumps up very readily and then comes down as soon as you stop turning the flywheel, it is a positive indication that the discharge valves are leaking. Experience will dictate just how elaborate to make these tests and determine whether or not the compressor should have shop attention or not.

C.—**Causes for Inefficiency**—The common causes for inefficient compressors are leaky discharge valves, leaky suction valves, poor fitting pistons and piston rings, poor lubrication and slow speed due to belt slipping, motor running slow, etc.

D.—**Compressor Sticking, Overloaded or Stuck**—When a compressor is overloaded due to refrigerating load, tight bearings, lack of oil, etc., it is very often possible to detect by pulling the switch when the machine is running. If the compressor stops practically instantaneously when the power is shut off, it certainly is not as free as it should be. If it makes a few revolutions after the power is turned off, it can be considered a fairly free and not overloaded to any great extent.

II. THERMOSTAT AND PRESSURE CONTROL

A.—**Function**—The function of the thermostat or pressure control of a refrigerating system is to automatically control the operation of the machine in order to give the desired food compartment temperatures at all time.

B.—**Thermostat**—The thermostat accomplishes this function by means of an external device which is sensitive to changes in temperature. This device is placed in either the chilling department, food compartment, in the brine, or on the chilling unit, and is set to start and stop the machine at predetermined temperatures of these parts.

C.—**Pressure Control**—The pressure control accomplishes this function by means of a device which is sensitive to changes in pressure. This device is connected to the low side of the system. By setting it for a predetermined pressure, it is made to start and stop the machine at these pressures, which are a direct function of the temperature of the refrigerant in the expansion coils.

D.—**Differences**—The main differences to remember between the thermostat and pressure control are:

1. As long as the temperature of the sensitive part of the thermostat is above the cut-out point on a *thermostat controlled* system the machine will continue to run regardless of the *pressure* on any part of the system (if the motor can operate it).

2. As long as the pressure on the low side of a *pressure controlled* system is above the cutout point, the machine will continue to run regardless of the *temperature* of any part of the system (if the motor can operate it).

3. If the pressure is not above the cut-out point on a *pressure controlled* system, the machine will not run, regardless of the temperature on any part of the system (unless the switch is stuck closed).

E.—**Possible Troubles**—The main difficulties that occur on the automatic temperature controls of different machines are sticking, wrong setting, and contact trouble.

Sticking open or closed will keep the machine off or on regardless of temperatures or pressures. Contact trouble usually results in an open circuit. Study your service manual and determine proper adjustments and repairs to make.

III. OVERCHARGE AND UNDERCHARGE OF REFRIGERANT

A.—**General**—It is very important to remember that in connection with overcharge and undercharge of refrigerant in a refrigerating system, the method of *regulation* and control of temperature determine how the operation is affected.

Since in a *high side float system* the amount of refrigerant in the high side is practically constant, any additional refrigerant over what is required for the high side goes into the low side of the system. Thus it becomes evident that any change in amount of refrigerant affects only the low side of this type of system (unless large loss of refrigerant).

In *dry systems* and *low side float flooded systems* the amount of refrigerant in the low side is practically constant, and it becomes evident that any change in amount of refrigerant in the system affects the high side of the system when the amount is too much and the low side and high when the amount is too little.

B.—**Overcharge**—Too much charge in the high side of any system results in a higher head pressure than normal because the condensing space for the vapor is reduced. This high head pressure reduces the efficiency of the compressor and hence longer running time is necessary for the desired results.

Too much charge in the low side of any system results in a higher suction pressure than normal and usually frosting or sweating return line and crank case. Since some of the refrigerant circulated does not evaporate in the expansion coils, more refrigerant must be circulated to do the same refrigeration and a longer running time is the result.

C.—**Undercharge**—Not enough refrigerant in the high side of any system causes some of the vapor in the condenser to go through the regulating valve before it is completely condensed. This results in a slightly low head pressure and longer running time, because not all of the refrigerant goes through a complete cycle.

Not enough refrigerant in the low side of any system causes some of the space in the low side to be ineffective. In a pressure controlled system, short cycles are a result, and in a temperature controlled system, longer running time is a result because of the reduced capacity of the evaporator.

IV. EXPANSION VALVE

A.—**Function**—The purpose of the expansion valve in a refrigerating system is to regulate the flow of liquid refrigerant from the condenser to the expansion coils in just the correct amount to obtain the desired pressure in the expansion coils. It ordinarily is set to let enough refrigerant into the expansion coils so that at the time this refrigerant reaches the end of these coils it is completely evaporatd.

B.—**High Setting or Leaking**—A high setting of the expansion valve means that more refrigerant than that which is necessary for complete evaporation is let into the expansion coils and hence an overflow into the return line. This results in a frosted or sweating return line and a higher suction pressure than normal. Longer running time is a result since some of the refrigerant is not vaporized in the expansion coils. A leaking expansion valve has the same effect as a high setting.

C.—**Low Setting or Sticking**—A low setting of the expansion valve means that less refrigerant than that which is necessary for the low side is regulated to the low side. With this condition, some of the low side coils are not utilized and only act as part of the return line of the system. This results in a low suction pressure and a low capacity of the machine, and consequently longer running time is necessary for the desired refrigeration.

V. FLOAT VALVE

A.—**Function**—The purpose of the float valve in a refrigerating system is to regulate the flow of the refrigerant from the condenser coils to the expansion coils by controlling the liquid level in the evaporator (low side float), or in condenser (high side float). The low side float opens when the liquid level in the low side becomes low and allows liquid from the condenser to flow into the expansion coils until a level at which the float closes is reached. The high side float opens when the liquid in the high side reaches a point where the float is lifted and opens, thus allowing refrigerant to flow into the low side from the condenser. The low side float *closes* to a raise in liquid level in the low side and the high side float *opens* to a raise in liquid level in the high side.

B.—**Restricted or Stuck Closed**—Most refrigerating systems that have a float valve for liquid control usually have the operation controlled by the pressure on the low side. In the event of a restricted or sticking valve, not enough refrigerant would be allowed to pass through the valve and short cycles would result. If the valve was stuck closed the machine would operate on short cycles until all of the refrigerant was pumped out of the low side, and then the machine would stop for lack of pressure to keep the switch closed.

C.—**Leaking or Stuck Open**—A leaking low side float valve usually lets more liquid into the low side than is necessary, and the result is that the liquid level in the low side becomes higher than normal and sometimes causes the return line to frost or sweat. A slight leak causes the machine to run too much and usually refrigerate more than normal. A float valve that is leaking badly or stuck open causes the machine to run all the time and refrigerate poorly, because there is not enough restriction in the line to allow the high pressure gas to change to a liquid before it passes through the valve.

A leaking high side float does not cause the return line to frost, because, ordinarily, when the machine is running, the leak is not sufficient to let more refrigerant than is necessary into the low side. Short cycles are the usual result of a leaking high side float on pressure control. It is sometimes possible to detect a leaking high side float by the excessive frosting at the outlet long after the machine has stopped, and the tendency to frost on the return line for a few minutes after the machine has just started up because, during the idle period, enough refrigerant has passed into the low side to fill it too full and frosting takes place until this condition is righted.

VI. AIR IN THE SYSTEM

Air in a refrigerating system is noncondensible at the normal pressures in the system, and hence remains as a gas, no matter what part of the system it is in. The air usually finds its way to the condenser and remains there to take up condensing space, causing a high head pressure. This causes the compressor to be less efficient and longer running time is a result. With some refrigerants the moisture in the air that sometimes leaks into the system is sufficient to cause corrosion and other troubles are a result.

It is sometimes possible to purge air from the system out of the top of the condenser. The best way is to pump all of the refrigerant into the condenser (if possible), allow the machine to stand for about fifteen minutes, and then purge slowly until you are sure that nothing but refrigerant is escaping. It is also sometimes advisable to discharge the complete system and recharge with the correct amount of refrigerant because it facilitates matters of service and saves considerable time that would ordinarily be necessary to check the job several times.

VII. REFRIGERATOR LOAD

Sometimes the duty placed on a machine is so great that longer running time than normal is a natural result even though the system is working to full capacity. The causes, as stated in the chart, are sometimes hard to explain to the customer because no one likes to hear that his ice box is leaking too much heat, used too much, or not taken care of properly. A few diplomatic suggestions will usually straighten this situation out. If the machine is too small for the requirements of the refrigerator, the only proper thing to do is to replace the unit with a larger one, or to increase the capacity of the present one by increasing the speed of the compressor, move the unit to a cooler location, or better still, install a water-cooled condenser if possible and not too expensive.

VIII. LOCATION OF UNIT

The location of the unit should be considered carefully when the installation is made. On any installation care should be taken to see that the unit is not located too near heat pipes or placed in closets or any place with excess high or low temperature.

IX. GENERAL HINTS AND SERVICE POINTERS

1. When using only part of a roll of tubing which is sealed at both ends, it is best to flatten it at the place where it is to be cut, and cut in the middle of the flattened portion. This insures against any opening to air or dirt, thus saving these portions for future use.

2. In preparing an elaborate run of tubing, in which many curves and arcs are encountered, it is a good plan to first prepare a templet of wire for the required design. By stretching out the wire, the exact length of tubing necessary can be easily determined.

3. The electric meter which registers the amount of energy consumed by appliance and lights in the home is a reliable aid in determining the load of the refrigerator motor. The meter disc revolves at a rate proportional to the energy consumed. The amount consumed per revolution is called the disc constant and it varies with the make, type and size of the meter. The disc constant equals the number of watt hours per revolution (usually stated on the name plate). By counting the number of revolutions this disc makes per minute, it is very easy to determine the load in watts.

Example: If the constant is 1/3 watt and the meter makes 15 r. p. m., the watt load would be: 15 x 1/3 x 60 or 300 watts. This is equal to the normal consumption of a ¼ h. p. motor at full load.

4. Use a pocket thermometer and place it in the chilling compartment the first thing on all service calls. Not only will it be a source of information to the service man, but it has a psychological effect on the customer to know that the box has a temperature around the freezing point.

5. In making sharp bends, insert a small, close wound spring in the tube at the point of bend to insure against kinking, and to make smooth, neat bends.

6. A recording voltmeter ammeter or wattmeter is a valuable aid in determining the operating cycles of a refrigeration machine.

7. It is a good policy to have a gradual slope in the suction line in order to facilitate the easy return of the oil to the compressor, and thus eliminating any oil traps.

8. Always remember that turning the expansion valve screw to the left lowers the suction pressure, and turning to the right raises the suction and allows more refrigerant into the low side of the system.

9. Application of a tallow candle to the bottom and sides of a belt will stop its squeaking.

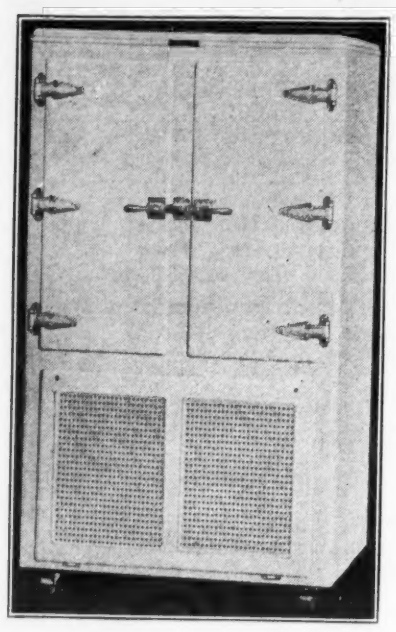
10. It is well to remember that it isn't always what you do that counts, but how you do it. This is particularly true when working in a customer's kitchen or basement. Take every precaution to prevent oil or grease from touching the floor or the walls around the unit upon which you may be working. Wipe off the box and all exposed parts upon completion of the work. Never leave it in an unsightly condition. To do so is to detract from your ability as an efficient service man, and is a reflection upon the firm for whom you may be working.

REFRIGERATOR SERVICEMAN'S "TROUBLE FINDER"

GENERAL AILMENT	SYSTEM	PARTICULAR SYMPTOMS	CAUSE OR CAUSES	SEE NOTE
MACHINE RUNS TOO LONG OR CONTINUOUS REFRIGERATION NORMAL OR TOO MUCH	ALL SYSTEMS	Test gauge shows the condenser pressure slightly low. Top coils of condenser cooler than normal.	Compressor inefficient or running too slow.	I
		Test gauge shows the suction pressure below the normal cutout point.	Thermostat or pressure control stuck or set too low.	II
		No mechanical symptom.	Load too great for the capacity of the machine. Defective refrigerator. Doors left open. Hot foods placed in refrigerator. Loose fitting doors. Poor insulation.	VII
	DRY SYSTEMS AND LOW SIDE FLOAT FLOODED SYSTEMS	Test gauge shows the condenser pressure above normal. Compressor and motor running hot.	Slight overcharge of refrigerant. Air in the system. Poor ventilation for condenser or machine in too warm a location.	III VI, VIII
		Test gauge shows the condenser pressure slightly low. Liquid line is warm.	Slight undercharge of refrigerant.	III-C
	FLOODED SYSTEM LOW SIDE FLOAT	Frosted or sweating suction line. Crank case cold when line is sweating.	Float valve leaking slightly at the seat	V-C
	FLOODED SYSTEM HIGH SIDE FLOAT	Test gauge shows the condenser pressure above normal. Compressor and motor running hot.	Air in the system. Poor ventilation for the condenser or machine in too warm a location.	VI, VIII
		Frost too far out on the suction line.	Slight overcharge of refrigerant.	III-B
	DRY SYSTEMS	Frosting or sweating suction line. Test gauge shows the suction pressure above the normal setting.	Expansion valve leaking slightly or set too high.	IV-B
		Test gauge shows the suction pressure below the normal setting. Heavy frost at the expansion valve outlet.	Expansion valve set too low for the refrigerant used or restricted by dirt.	IV-C
MACHINE RUNS CONTINUOUS REFRIGERATION POOR OR NOT AT ALL	ALL SYSTEMS	No mechanical symptom.	Load too great for the capacity of the machine. Defective refrigerator. Doors left open. Hot foods placed in refrigerator. Loose fitting doors. Poor insulation.	VII
	DRY SYSTEMS AND LOW SIDE FLOAT FLOODED SYSTEMS	Test gauge shows the condenser pressure considerably above normal. Compressor and motor running very hot.	Large overcharge of refrigerant. Much air in the system. Very poor ventilation for condenser or machine in much too warm a location.	III-B VI, VIII
		Test gauges show the suction pressure above normal and condenser pressure below normal. — Return line sweats. Crank case cold.	Float valve leaking badly or stuck open. Expansion valve leaking badly, stuck open or set way too high.	IV-B, V-C
		— Warm liquid line. Crank case warm.	Considerable undercharge of refrigerant.	III-C
		— No other symptom.	Very inefficient compressor.	
	FLOODED SYSTEM HIGH SIDE FLOAT	Test gauge shows the condenser pressure considerably above normal. Compressor and motor running very hot.	Much air in the system. Very poor ventilation for condenser or machine in much too warm a location.	VI, VIII
		Test gauges show the suction pressure above normal and condenser pressure below normal. — Return line sweats. Crank case cold.	Large overcharge of refrigerant.	III-B
		— No other symptom.	Very inefficient compressor, float valve leaking badly or stuck open.	I, V-C
	ALL THERMOSTAT CONTROLLED SYSTEMS	Test gauges show the suction pressure much below normal and condenser pressure low.	Expansion or float valve stuck closed. Plugged line—high or low side.	IV-C V-B
MACHINE RUNS ON SHORT CYCLES REFRIGERATION AS NOTED BY SYMPTOMS	ALL SYSTEMS	Refrigeration normal or too much No mechanical symptom.	Thermostat or pressure control operating on too short a range.	II
	ALL PRESSURE CONTROL SYSTEMS	Machine not refrigerating (Noted by cooling coils or brine tank getting warm). Machine will stop eventually.	Expansion or float valve stuck closed. Plugged line—high or low side.	IV-C V-B
		Test gauge shows a rapid rise in suction pressure above the cut in point when the machine is stopped. Poor refrigeration.	Partial restriction in the high or low side lines. Expansion or float valve stuck almost closed.	IV-C V-B
	FLOODED SYSTEM HIGH SIDE FLOAT PRESSURE CONTROL	No frost on the return line at the chilling unit outlet. Refrigeration normal.	Slight undercharge of refrigerant.	III-C
		No particular symptom unless test is made. Refrigeration normal.	Compressor discharge valves leaking.	I-C
		Heavy frost at the float valve outlet. Refrigeration normal or too much.	Float valve leaking slightly at the seat.	V-C
		Cooling coils or brine tank only partially frosted. Poor refrigeration.	Considerable undercharge of refrigerant. Not enough brine in the cooling tank.	III-C
MACHINE DOES NOT RUN AT ALL NO REFRIGERATION	ALL SYSTEMS	Test gauge shows the suction pressure above the normal cutout point. Automatic switch is open.	Thermostat or pressure control switch stuck open.	II
		Test gauge shows the suction pressure above the normal cutout point. Automatic switch is closed.	Open circuit—fuse blown, contacts dirty, broken wire, etc. No power. Motor burned out.	
		Test gauge shows the condenser pressure much below normal.	Condensing unit in much too cold a location.	VIII
	ALL PRESSURE CONTROL SYSTEMS	Test gauges show the suction pressure within the normal range and condenser pressure lower than normal.	Expansion or float valve stuck closed. Plugged line—high or low side.	IV-C
		Test gauge shows the suction pressure at or below the normal cutout point.	Refrigerant all leaked out of the system.	III-C
ODORS IN REFRIGERATOR	ALL SYSTEMS	**CAUSES** Refrigerant leak at the chilling unit. Decayed foods left in the refrigerator. Insulation not sealed from the refrigerator. Dairy products not kept in closed containers. Drain trap not filled. Improper air circulation due to too much frost on the chilling unit. Cooking oils and salad dressings not kept in closed containers. Brine odor due to leak in brine tank. Improper arrangement of foods. Paint or varnish odors in new cabinets.		
MACHINE IS NOISY	SYSTEMS WHICH HAVE PARTS REFERRED TO	Motor pulley loose. Compressor flywheel loose. Flywheel and pulley out of line. Belt too loose. Rough spots on the belt. Belt squeak. Parts loose on the base. Too much end play in the motor. Motor brushes dragging. Compressor seal squeak. Connecting lines vibrating. Chattering expansion valve. Compressor noisy due to pumping oil or liquid refrigerant. Compressor noisy due to loose wrist pins, connecting rods, bearings, eccentric, etc. Compressor valves noisy. Compressor noisy due to high head pressure. Unit not setting level.		
DESSERTS DO NOT FREEZE	ALL SYSTEMS	Recipes for desserts not followed correctly. Too much flavoring extract used. Not enough freezing time allowed. Excessive amount of fruit juices used. Thermostat or pressure control not adjusted properly. Any causes listed above where poor refrigeration is a result.		
ICE FREEZES, BUT FOOD COMPARTMENT TOO WARM	ALL SYSTEMS	Circulation of air in the refrigerator restricted by—too much frost on the chilling unit. Foods too crowded in the refrigerator. Paper or cloth used on the shelves. Poor insulation in the refrigerator. Too frequent opening and closing of doors. Too warm foods placed in the refrigerator. Chilling unit too small for the refrigerator requirements.		

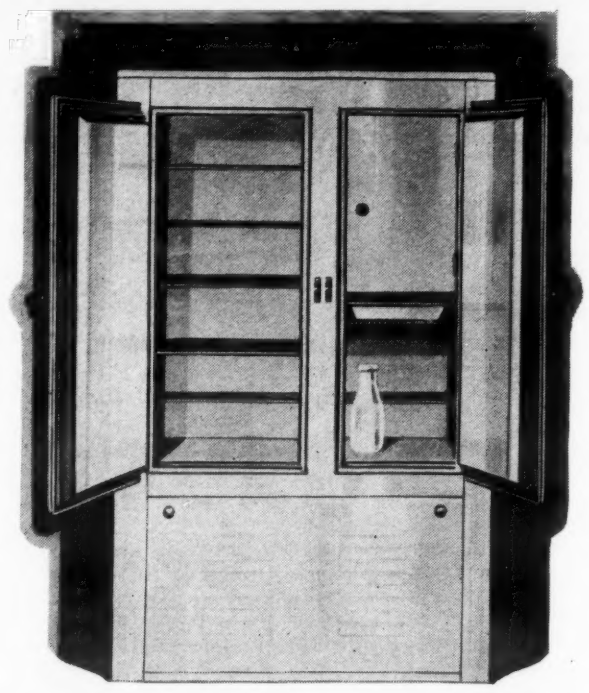
Cabinet Manufacturers Give Increased Attention

Servel



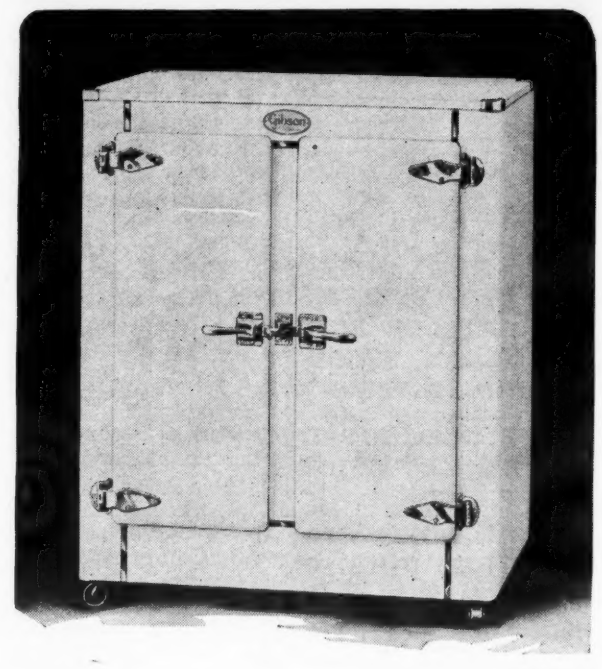
CABINET Model K-7, constructed with metal exterior and porcelain lining, by Servel, Inc., Evansville, Ind. This model is made in sizes of 5, 7 and 10 cu. ft.

Illinois



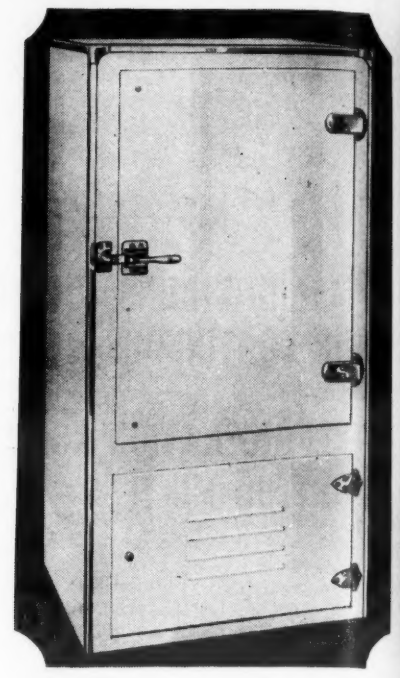
ILLINOIS Refrigerator Co., Morrison, Ill., announces a line of 1930 cabinets which can be equipped with sanitary bases. New pan type door linings have been added and exterior trim has been eliminated from all models.

Gibson



TWO-DOOR model included in the domestic line made by Gibson Refrigerator Co., Greenville, Mich. Exterior finishes of the domestic refrigeration cabinets are porcelain and lacquer, while the interiors are finished in porcelain and enamel.

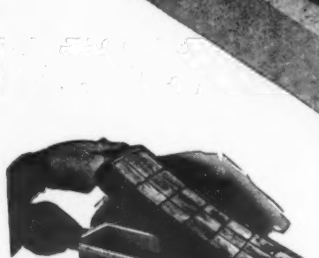
Crystal



MODEL No. 533, manufactured by Crystal Refrigerator Co., Fremont, Nebr. This model has a food storage capacity of 5. 3. cu. ft.

Are You Getting Your Share?

FLEXO TRAY



Bend Flexo Tray. Remove one cube or all of them. No fuss, no splash, no waste, no delay.

Thousands Will Be Bought For Christmas

Nationally Advertised

Millions of families are reading about Flexo Tray in these magazines:

Good Housekeeping
Ladies' Home Journal
House Beautiful, McCall's
Pictorial Review
House and Garden
Better Homes and Gardens and
American Home.

Tie up with this advertising. Display Flexo Tray in your window. Put our folders in your outgoing mail. Use our mats in your local advertising. Write today for sales plan.

Flexo Tray is selling fast. It removes the only inconvenience of electrical refrigeration, by making it easy to remove ice cubes. No splashing water—no waste—no meltage with Flexo Tray. That's why it is such a wonderful Christmas gift, to be used and enjoyed *every day* throughout the year. Our sales plan includes national advertising, free mat service, forceful sales literature and *liberal discounts.*

WRITE TODAY

For free 20 page booklet "How To Sell Flexo Tray," descriptive literature, prices and discounts.

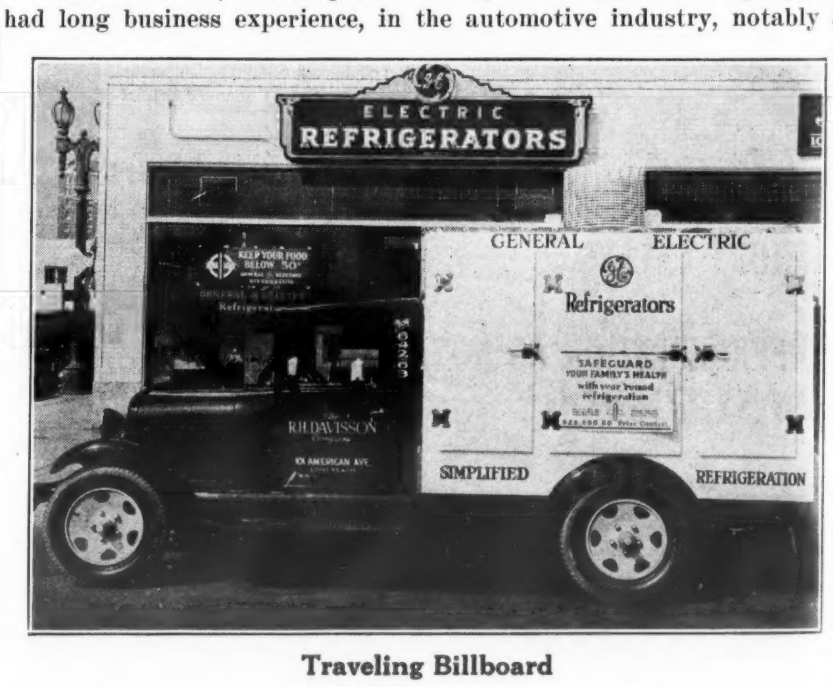
G. M. Dwelley, Inc.
548 CURTIS BUILDING
DETROIT, MICHIGAN

How a California Dealer Uses the Straight Commission Plan

By Harold J. Ashe

WITH a quota two and one-half times that of last year, the R. H. Davisson Co., General Electric refrigerator distributors for Long Beach, Calif., are exceeding it, one month by 300 per cent and another by 750 per cent over last year's quota for that month.

Mr. Davisson, a soft-spoken Texan, who heads the company, has had long business experience, in the automotive industry, notably as



Traveling Billboard

Hudson-Essex distributor in Nebraska. In fact, this experience has been incorporated into his electric refrigeration sales methods.

Every one of the nine salesmen work on a straight commission—ten per cent on individual sales and five per cent on quantity sales.

"Whenever a salesman sells a quantity order," says Mr. Davisson, "that customer automatically becomes his prospect for one year. Even though this customer might come into the store and buy another electric refrigerator, the salesman is fully protected on the commission. This gives salesmen a feeling of security with their clients.

"Salesmen are confined to one hour a day of straight canvassing, the rest of the time being essentially their own. They, however, must make four canvass calls daily and make written reports. In addition they are expected to contact prospects acquired on floor days or in other ways."

Mr. Davisson is very careful in selecting his sales force. He does not believe in taking on anyone that is willing to try the so-called "game" of selling. He seeks only men able to make $200 or more a month, and does not want them if their commissions do not aggregate this sum.

"We are in a contest of some kind nearly all the time," he explained. "Either it is a national contest, one devised by the Los Angeles distributor, or one of our own planning."

In the local contests, Mr. Davisson plans them so that there is a lapse of fifteen days between contests. This discourages holding back on closing sales due to being out of the running and hoping to throw these sales into the next contest.

"Usually, I give a good Stetson hat," explained Mr. Davisson. "You'd be surprised how the salesmen will work for such a first prize. Also there are cash bonuses. We divide the contest into four periods in the month, and at the end of each period five dollars is awarded to the salesman who makes the most over his period quota. To the man making all four quotas and best over his quota goes the Stetson hat, second prize being a fine pair of shoes, valued at $15. The entire conest—the last one—cost $117."

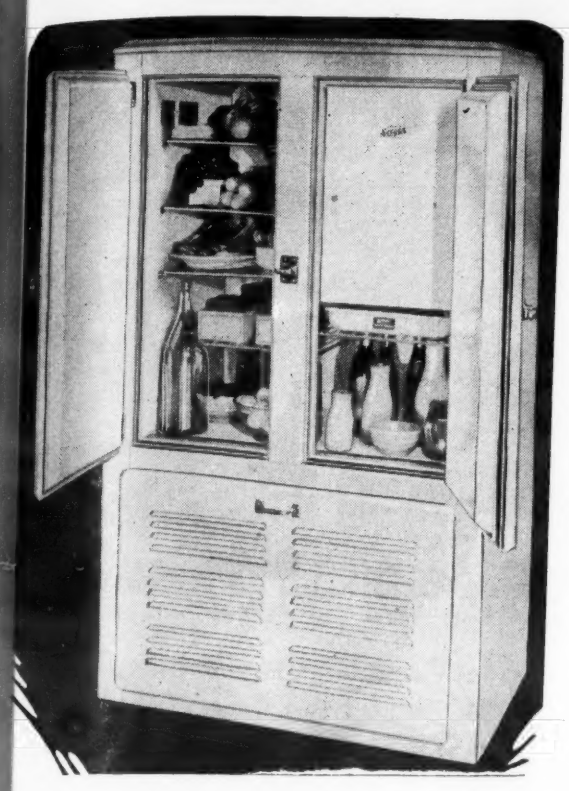
In the contests salesmen's quotas are based partly on past performance and upon ability, latent or demonstrated. In this way the poorest or least experienced salesman has the same chance as does the ace salesman.

The day following the sale of an elec-

(Concluded on Page 19, Column 1)

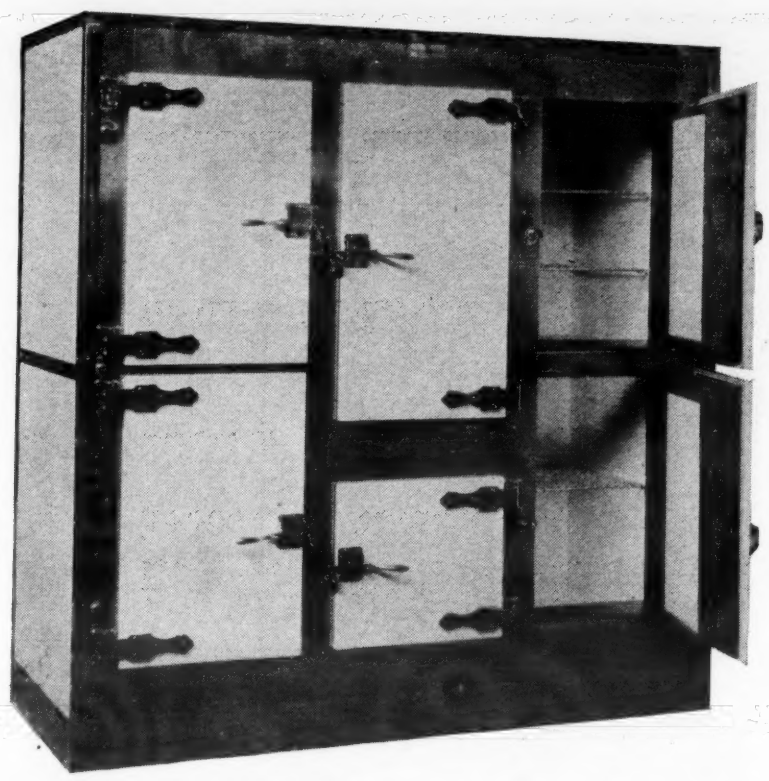
to Insulation, Finish, Hardware and Gaskets

Seeger



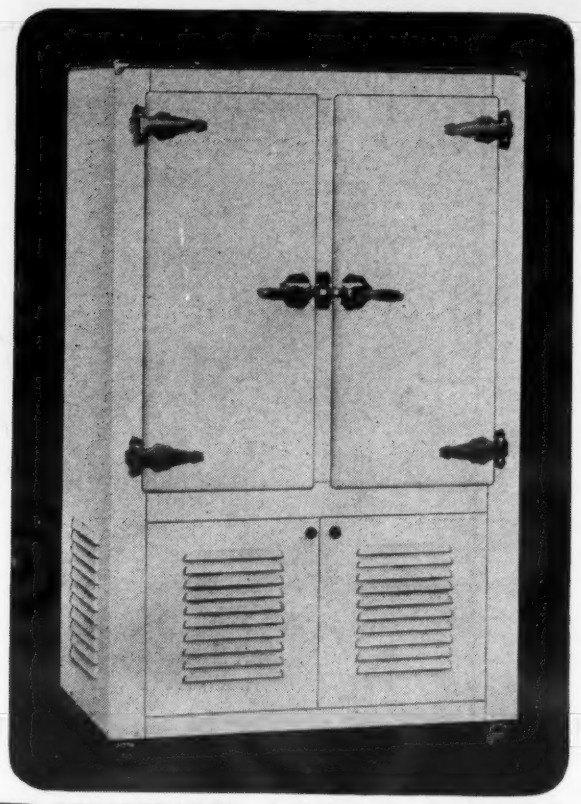
CABINET, with vegetable bin at bottom, designed by Seeger Refrigerator Co., St. Paul, Minnesota. Seeger manufactures 20 models ranging from 4 to 30 cu. ft.

Lorillard



LORILLARD REFRIGERATOR CO., Kingston, N. Y., manufactures this model No. 200 porcelain exterior refrigerator. It has an exterior width of 70½ in., depth of 29¼ in., height of 72 in., and the net food capacity of 29 cu. ft.

Belding Hall



REFRIGERATOR designed by Belding-Hall Co., Belding, Mich. This is one of 19 models, which range in food capacities from 4 to 15 cu. ft. The cabinet is insulated with corkboard.

tric refrigerator, the salesman calls back to visit with the customer, and makes one call each week for the next four weeks, to get the names of additional prospects suggested by the satisfied customer.

Salesmen are expected to call upon prospects every fifteen days. Salesmen will average about five prospects each day they are on the floor, and therefore, this must be supplemented by prospects uncovered by canvassing. Mr. Davisson tries to hold each salesman down to a card file of fifty prospects, believing that it will keep the salesman fully occupied.

Davisson finds that his delivery truck, designed to resemble a large electric refrigerator, has been the source of much profitable business. He takes no credit for originating the idea, stating that George Bauder, San Diego distributor for General Electric, built the first such truck on a small chassis.

"Since putting this truck on the street," said Mr. Davisson, "I have traced many sales directly to it. Women have come into the store and mentioned that our refrigerators look just like the big truck they saw. They further have volunteered that the truck was the one thing that definitely turned their minds to us and our product."

The store that the company now occupies was formerly used by a real estate company. It was selected because of its unusual display windows, making the entire display floor visible from any location on either street. The windows have no backing, so that units immediately back of the plate glass can be inspected by customers on the floor, and those on the floor can be viewed from the street.

CHILDREN'S HOME SEEKS G. E. UNIT IN COUPON CAMPAIGN

Macon, Ga.—A campaign for securing a much-needed electric refrigerator is being conducted by friends of Appleton Church Home. This home for dependent children is anxious to secure a General Electric refrigerator and is calling upon friends to help it collect 100,000 "Octagon coupons."

The number of children in this home makes a large family, and an electric refrigerator will facilitate feeding problems.

UNIVERSAL COOLER CO., LTD. COMPLETES COLLEGE JOB

Windsor, Canada—Kennedy Collegiate Institute, which was officially opened by His Excellency, Viscount Willingdon, Governor-General of Canada, recently, is equipped throughout with electric refrigeration installed by Universal Cooler Co., Canada, Ltd.

BLACK TO PUSH COPELAND SALES IN WESTERN CANADA

Detroit, Mich.—Earl J. Black, representative of H. M. Robins Co., export distributors for Copeland Products, Inc., has been assigned to Western Canada, with headquarters at Vancouver. During the next several months he will organize Copeland sales in that territory.

The name Celotex has become a household word for SUCCESSFUL INSULATION

THE minute you say "Celotex insulation" to a prospective customer, your refrigerator becomes easier to sell.

For almost every man and woman in the United States knows the name Celotex . . . knows that it stands for the power to shut the heat out—hold the cold in.

The Celotex in your refrigerator is as highly effective insulation as any ever produced. But the vital point, to the salesman on the floor, is that the customer *instantly accepts* the fact of successful insulation without further explanation or argument.

"Celotex insulation" tells the whole story.

Specially fabricated . . . The Celotex now used by almost all of the leading manufacturers of electric refrigerators is a *very special kind* of Celotex . . . fabricated for use in this particular field by processes that increase its insulating efficiency to the highest possible point.

No open joints . . Celotex is cut to fit each specification so that each insulated area is covered with a single board of exactly the right thickness. There are never any open joints or seams that handicap the effectiveness of the insulation.

Clean and odorless . . Celotex is made from the long, tough fibres of cane, containing millions of tiny sealed air cells that produce its remarkable insulating effect. These fibres are carefully sterilized. They are entirely odorless. There is no insulating material more sanitary in every way than Celotex.

Strong and light in weight . . The great strength of Celotex boards adds to the sturdiness and the durability of the refrigerator itself . . strengthens and reinforces the frame and the walls. Yet they are so light in weight that they aid the mobility of the refrigerator.

Make the most of this great selling point

Many of your most telling arguments may be too technical for your customers to grasp readily.

But when you talk "Celotex insulation" you are on familiar ground. Here's where every prospect has the chance to enter into the discussion . . . the opportunity to agree with you intelligently.

And this agreement is usually the point that leads sales to a successful conclusion.

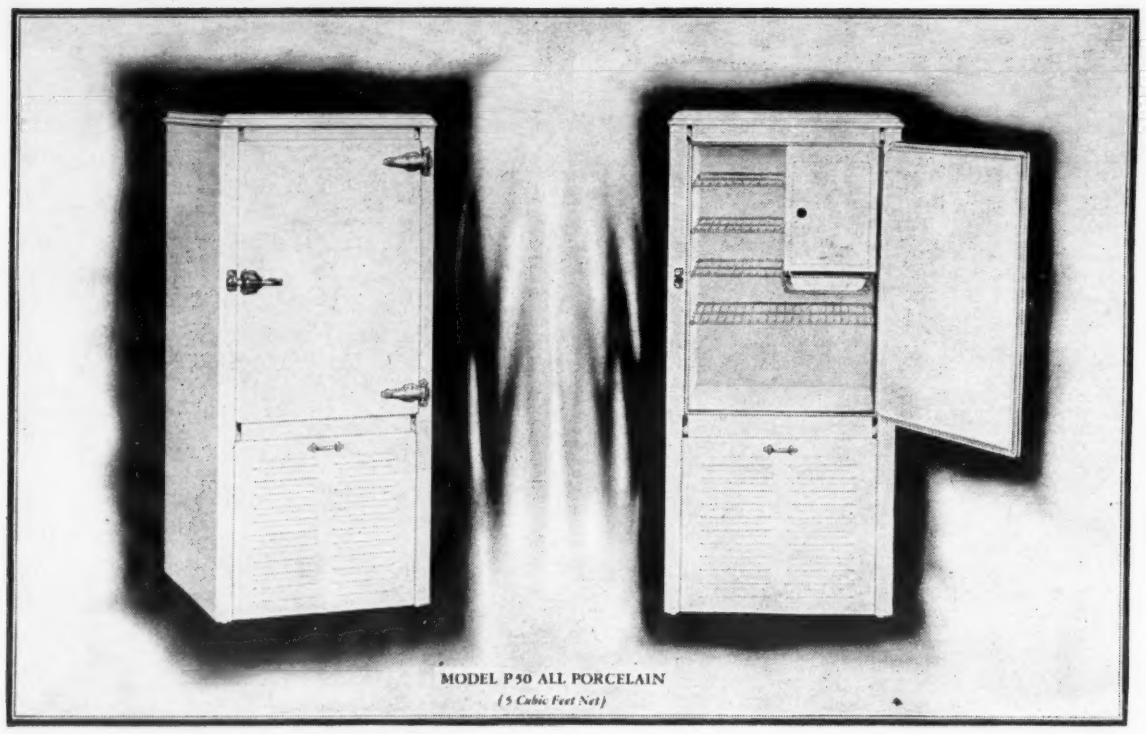
The Celotex Company, 919 North Michigan Ave., Chicago, Illinois.

The word CELOTEX (Reg. U. S. Pat. Off.) is the trademark of and indicates manufacture by The Celotex Company Chicago, Ill.

CELOTEX
BRAND
INSULATING CANE BOARD

NEW LINES OF REFRIGERATOR CABINETS FOR D

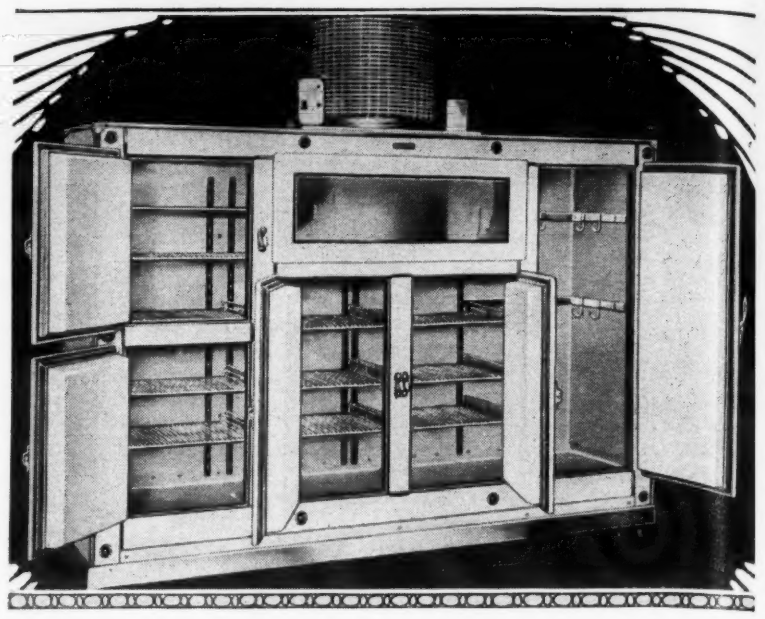
New All-Porcelain Model by Rex



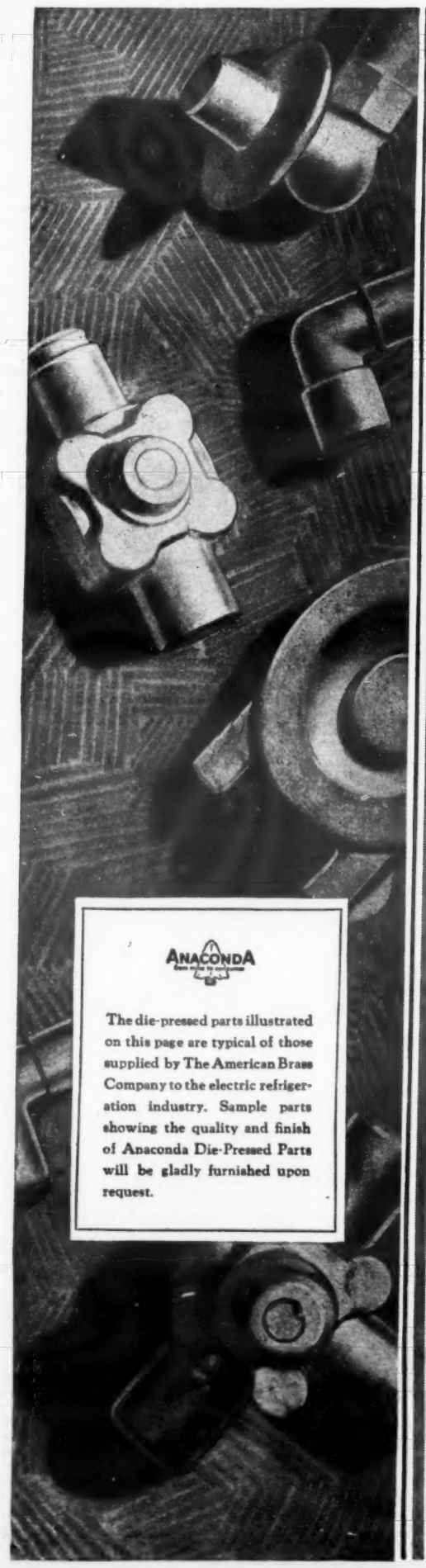
MODEL P50 ALL PORCELAIN
(5 Cubic Feet Net)

OPEN and closed view of all-porcelain model P-50 cabinet, made by Rex Manufacturing Co., Connersville, Ind. This cabinet, which is constructed of steel, has a net food storage capacity of 5 cu. ft. It is insulated with corkboard. Rex also offers six models in its LP4 series, with or without compressor housings, having exterior finishes of lacquer or porcelain and interior finishes of enamel or porcelain.

General Electric Commercial Type



AN open view of commercial model C-601, made by General Electric Co., Cleveland, Ohio. It has a food storage capacity of 60 cu. ft., a food shelf area of 75 sq. ft., interior finish is white porcelain on steel, while the exterior finish is white lacquer on steel. A DR-5 unit, ½-horsepower, single phase, condenser motor is used with this refrigerator.



ANACONDA

The die-pressed parts illustrated on this page are typical of those supplied by The American Brass Company to the electric refrigeration industry. Sample parts showing the quality and finish of Anaconda Die-Pressed Parts will be gladly furnished upon request.

Cut your Costs
with
ANACONDA
DIE-PRESSED PARTS

ANACONDA Die-Pressed Parts have come into favor with the electric refrigeration industry because they reduce production costs.

These parts are dense, close-grained and uniform in structure, making them gas, air and water tight. Free from hidden flaws common in castings, rejections with Anaconda Die-Pressed Parts are reduced to a minimum. They are smooth of surface, close to dimensions, lighter in the rough and require very little machining. This minimizes scrap losses.

Their high tensile strength—nearly twice that of brass castings—permits a saving in material costs because less metal is necessary. The ability of Anaconda Die-Pressed Brass to withstand sudden temperature changes, corrosive action and mechanical stress is also a factor of importance in many cases.

Manufacturers in many different fields have improved the quality of their product and effected substantial savings in production and material costs by using Anaconda Die-Pressed Parts. These will be supplied machined when called for. Inquiries accompanied by blue prints, sketches or models of parts required will be given prompt attention. Full information on request, or a representative will gladly call at your convenience.

THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Conn.
Offices and Agencies located in the Principal Cities
Canadian Mill: ANACONDA AMERICAN BRASS LTD.
New Toronto, Ontario

ANACONDA
COPPER ANACONDA BRASS

MOUNTAIN CLIMBING SALESMEN VIE FOR PRIZES IN CONTEST

Stud Poker Contest Also Holds Interest of G. E. Men

Cleveland, Ohio.—The annual "On the Top" refrigerator sales campaign of General Electric Co., which started Oct. 15 and ends Dec. 31, is mapped out as a mythical mountain climbing contest with material rewards in view for the salesmen who climb the highest. "Shelter houses" are distributed along the mountain side, and salesmen reaching them, through the medium of successfully selling set quotas, will also receive prize remunerations.

Every salesman is registered under one of four classifications, so that chances for achieving prizes will be equal to all contestants. These classifications are: domestic refrigerator and small apartment house salesmen, large apartment house salesmen, commercial refrigeration salesmen, and water cooler salesmen. Where a salesman is qualified to make sales in all of these classes, credits are listed separately under each class.

Each classification has a sales quota worked out to provide credits on an equitable basis with the others, and salesmen must sell the quota set for a classification before being entitled to select prizes.

Rules of the mountain climbing contest follow: Each distributor must appoint a contest manager who will act as a guide, to maintain enthusiasm and arbitrate in matters pertaining to the contest. All salesmen, whether retail, water cooler, apartment or commercial, are eligible, but no salesman will be permitted to take part in the contest whose name has not been properly registered. Retail salesmen will have a quota of $1,200, and they must sell this volume of business, all of which must be delivered by Dec. 31; apartment salesmen will have a quota of 40 machines, 50 per cent of which must be delivered by Dec. 31; commercial salesmen will have no quota, but will be eligible to compete for prizes after they have made one sale; water cooler salesmen must sell five water coolers to reach the first "shelter house," and after that their quota will be the same as the apartment house salesmen. The sale of domestic refrigerators will not be considered complete until delivery has been made, and no credit will be given until delivery has been made. Any sale of four or more refrigerators to one purchaser, installed in one building, will be considered as apartment house sale whether sold at a discount or not. Any salesman found transferring credits or pooling sales will be immediately disqualified in the contest. Salesmen and dealers, to receive prizes, must still be employed in the sale of General Electric refrigerators at the close of the contest. In case of a tie for any of the special awards, the distributor or dealer reporting the greatest volume of business for any single week of the contest will be considered the winner.

The Stud Poker game, a co-ordinated contest, is separate from the Mountain Climbing contest and yet related to it. It is a game of chance, but salesmen must climb the mountain in order to get cards.

When the salesman registers for the contest he receives his first or hole card. Following this he is dealt another card as he reaches each quota or "shelter house." The salesman is permitted to keep only five cards, discarding the others as he makes up a hand. The value of all hands run the same as poker hands: royal flush, straight flush, four of a kind, full house, flush, straight, three of a kind, two pair and one pair. In case of a tie, suits shall be valued as in bridge: spades, hearts, diamonds and clubs.

Five grand prizes are offered for the best hands: Ford roadster, G-75 refrigerator, cabinet model Radiola No. 6, cogswell chair or golf set, and pigskin bag or ladies' fitted bag.

Whitest and Most Durable
LACQUER FINISH
for Refrigerators

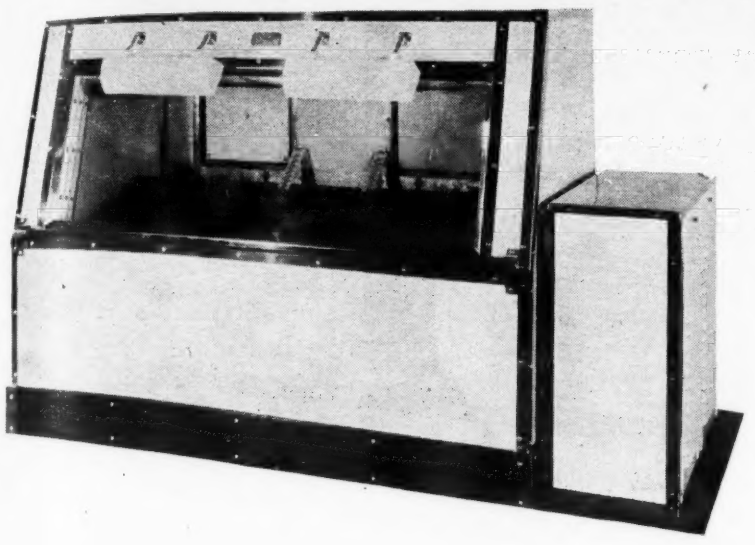
To manufacturers of cabinets we offer the whitest and most durable lacquer finish—produced at an amazingly low cost per square foot.

BRADLEY-HURTZ COMPANY
Successors Industrial Division Bradley & Vrooman Company
2626 S. DEARBORN ST. CHICAGO, ILLINOIS

ENAMELS LACQUERS INDUSTRIAL PAINTS & VARNISHES

DOMESTIC AND COMMERCIAL INSTALLATIONS

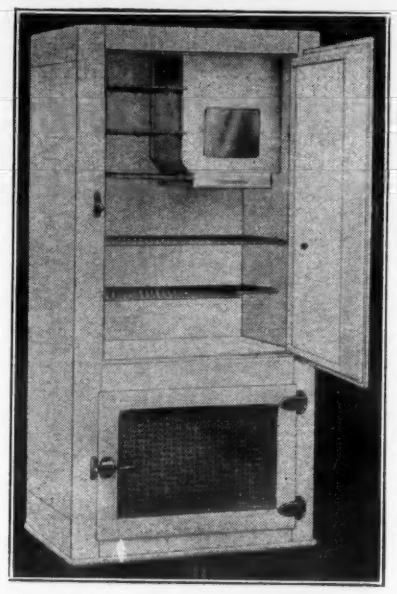
Hill Display Case for Meats and Fruits



THIS Dry-Cold case, manufactured by C. V. Hill & Co., Inc., Trenton, N. J., is insulated with 4 in. of cork supported by two layers of truss board, has four plate glasses in front, porcelain finish outside, duco inside, storage in base, hinged doors in rear, contains double electric 25-watt lamps and reflectors. It is made especially for frozen or chilled meats, ice cream in fancy designs, and fruit.

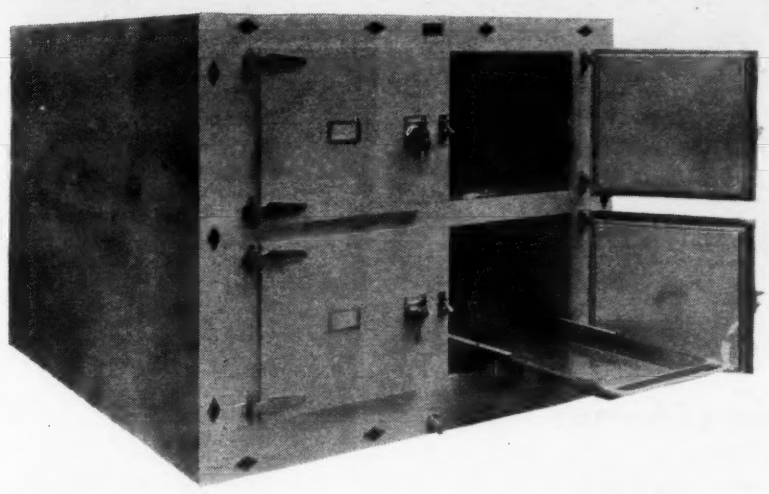
Note: See page 28 for Special Directory of Refrigeration Cabinet Manufacturers

Renfrew Domestic Model



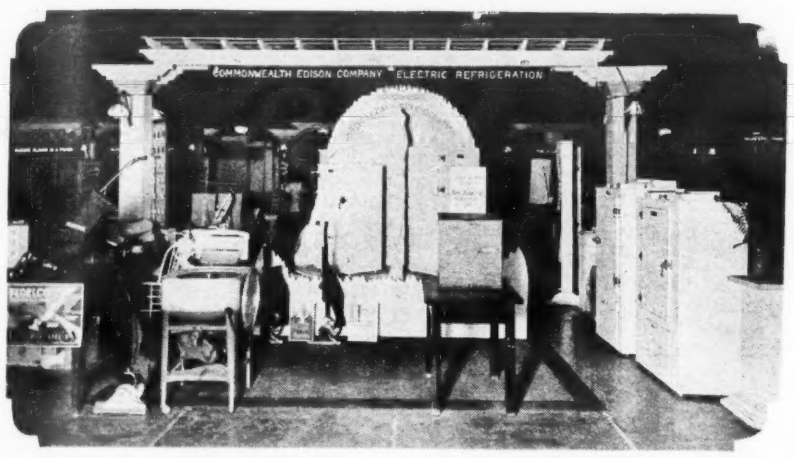
ONE of eleven standard cabinets designed for electric refrigeration by Renfrew Refrigerator Co., Ltd., Elizabeth St., Renfrew, Ontario, Canada. This model is constructed of wood and insulated with corkboard sealed with hydrolene. Food capacities of the Barnett line range from 3.75 to 20 cu. ft.

Campbell Adds Line of Mortuary Cabinets



MORTUARY cabinets, adaptable to electric refrigeration, have been added to line manufactured by Campbell Refrigerator Co., 3200-10 Auer Ave., Milwaukee, Wis. These cabinets, having a height of 5 ft. 9 in., and a depth of 8 ft., will accommodate eight cadavers. The exposed front or sides of birch veneer are finished grey lacquer and unexposed sections are covered with galvanized iron, painted. Three-inch corkboard insulates the cabinets. The lining is matched spruce, covered with galvanized iron, soldered watertight, and painted. Slides are market forge telescoping type, equipped with either galvanized or monel tray. The hardware is heavy cast brass, nickel-plated, each door is furnished with a cardholder and locking device.

15,000 See Chicago Food Show



Commonwealth Edison Company's exhibit at the Herald-Examiner Food Show recently staged at Chicago, Ill. The show was attended by 150,000 people. As the result of a free drawing a "Kelvinator Four" was awarded to the holder of the lucky ticket.

DRINKING WATER FAUCETS
for
Refrigerators — Water Coolers
New model now available for use on city water pressure

CORDLEY & HAYES
1 Leonard St. New York City

REFRIGERATION RUBBER WARE
Specializing in the development and manufacture of hard and soft rubber parts for electric refrigeration.
THE AETNA RUBBER CO.
ASHTABULA, OHIO

ILLINOIS FRIGIDAIRE MEN PLAN WINTER SALES

Peoria, Ill.—About 175 dealers, salesmen and wives attended the Frigidaire convention which was held at the Elks Club, Oct. 16. The meeting was sponsored by Domestic Electric Appliance Co., distributors for central Illinois, with Frank Hazen, sales manager, in charge of the program.

ELECTROLUX, INC., OPENS SEATTLE BRANCH

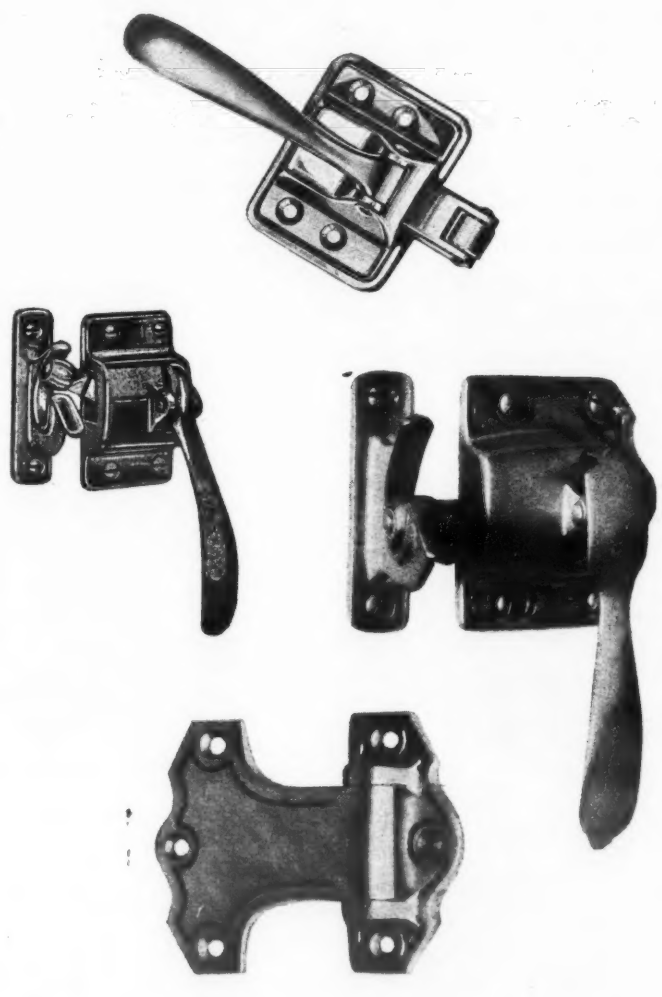
Seattle, Wash.—W. B. Bennett, vice president and general manager, Electrolux, Inc., on a trip to the Pacific Northwest for the purpose of establishing branches, has appointed G. D. Runnels as Seattle branch manager and has opened offices at 1411 4th Avenue Building.

ENLARGING FACTORY

Dayton, Ohio—An addition being built to the plant of Inland Mfg. Co. will cover almost five acres. It will be fitted for the production of rubber compound accessories for Frigidaire Corp. and Chevrolet, together with steering wheels for General Motors cars. Mr. Wallace Whittaker is president of Inland Mfg. Co.

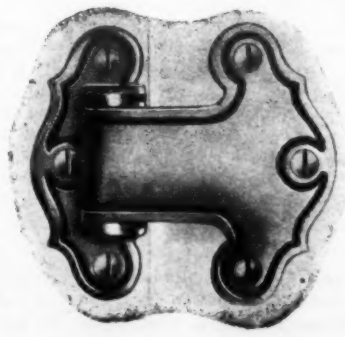
precision built Motor, Transmission, Eccentric *and* Crank Shafts
Made to your specifications.
Send us your blue prints—
We will send you our prices.

MODERN MACHINE WORKS, INC.
196 Milwaukee St. MILWAUKEE, WIS.



de luxe Hardware
from the
GRAND RAPIDS BRASS CO.
Grand Rapids, Michigan

COLOR already has proved itself a selling factor in the refrigeration field. The next step . . . beautiful hardware . . . is exemplified by these and many other graceful creations by the Grand Rapids Brass Company. On your better models, these patterns complete the appeal to the woman who buys. Finishes are worthy the designs . . . satin silver, brushed brass, genuine chromium plate, or any other finish required. And all are designed and built along the same practical principles which have gained for Grand Rapids Brass an outstanding reputation for positive action and lifelong, satisfactory service!



If you are thinking of a special high-grade line for next season, we will gladly furnish complete information.

REFRIGERATED DISPLAY CASES AND COUNTERS

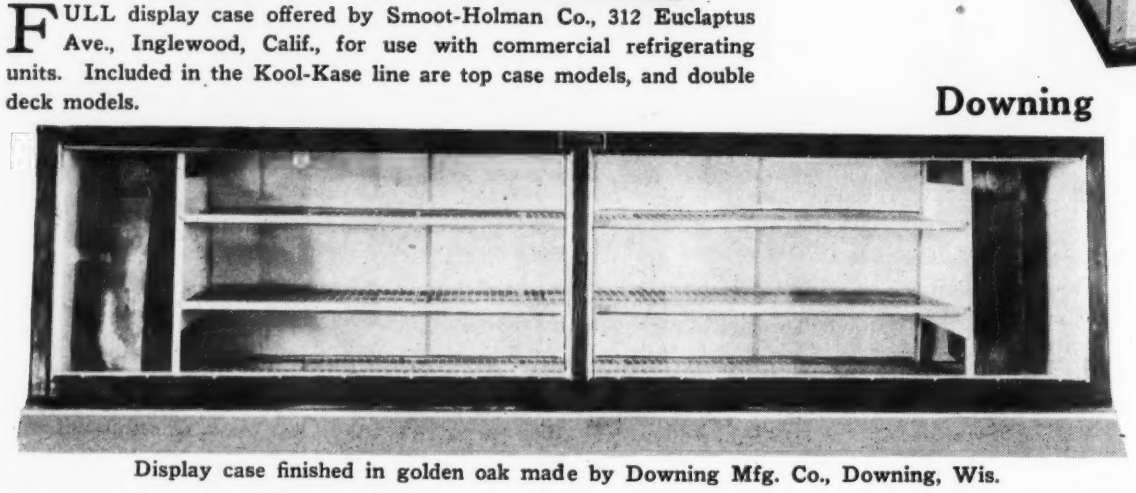
Smoot-Holman

FULL display case offered by Smoot-Holman Co., 312 Euclaptus Ave., Inglewood, Calif., for use with commercial refrigerating units. Included in the Kool-Kase line are top case models, and double deck models.

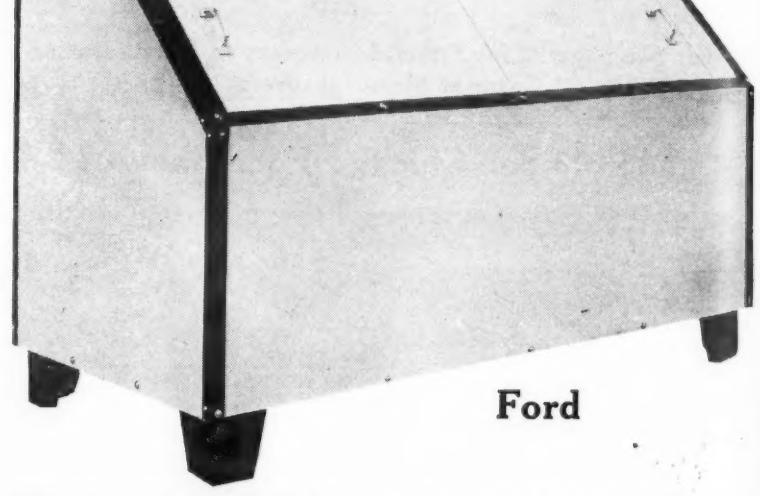
Milburn

MODEL No. 110 white porcelain Kalamazoo display case trimmed in dark gray. Seven models finished in either oak or porcelain are made by the Milburn Refrigerator Co., 1908 Reed St., Kalamazoo, Mich. The case shown here is insulated with corkboard and three glass plates, with one-half inch of air space between, are used for the front display panels.

Downing



Display case finished in golden oak made by Downing Mfg. Co., Downing, Wis.



Ford

FORD REFRIGERATOR CO., INC., 219 Mary St., South Jackson, Fla., builds refrigerators to customers' specifications. This all-metal unit was constructed to fit under counters. It has coils overhead and is insulated with three inches of corkboard.

Little Motors • Big Performance

The motored appliance is invading the home... raising the performance standard for small motors. Wagner has pioneered in the improvement of small motor performance... increasing quietness, efficiency and power-factor... decreasing bearing and other service troubles. Check your motor with up-to-date Wagner performance.

Wagner, Quality

Consult Wagner, because Wagner builds every commercial type of a.c. motor.

Literature on Request

WAGNER ELECTRIC CORPORATION

6400 Plymouth Ave., St. Louis

Sales and Service in 25 Cities

PRODUCTS . . . FANS: DESK, WALL, CEILING
TRANSFORMERS: POWER, DISTRIBUTION, INSTRUMENT
MOTORS: SINGLE-PHASE, POLYPHASE, DIRECT CURRENT

61-7532-1

HOW A SUCCESSFUL SALESMAN PLANS HIS DAY'S WORK

By Lester O'Neill
Public Service Electric and Gas Co., Hackensack, N. J.

Editorial Note: Mr. O'Neill is probably one of the most successful gas appliance salesman in the United States. During 1928, he sold over $75,000 worth of appliances, mostly at retail. The original article was published in bulletin form by the Public Service Electric and Gas Company of New Jersey for distribution among their sales organization.

I 'M going to change my plan this year and work my territory differently. I think that will be better for me than the way I worked it last year."

The above statement has been made a good many times—sometimes by men who have been working the same territory for years. Such uncertainty as to how a field should be covered, after many years spent in that field, is very dangerous and very unfortunate.

My Plan of Work

I work on a definite plan consisting simply of three cardinal points:

1. More calls per day.
2. An honest, fair and square day's work.
3. A definite amount of sales each month.

Before explaining the features of my plan, however, I want to say that the number of calls made every day is limited because it pays to spend a definite amount of time on each call.

When I first started in this business of selling gas appliances, my first idea was to get through each call just as quickly as possible. This plan would give me a greater number of calls each day. But I soon found out that by rushing my calls I did not make sales, and naturally my earnings were not satisfactory. Now I find that an average of 30 minutes a call gets better results than rushing through too quickly.

Before I planned my system I was under the impression that I was doing a good honest day's work every day, but when I analyzed the things I was doing, I was astonished to find that a large part of the day was wasted effort, lost motion, and just plain loafing. For example, I found there was a lack of system in the way I followed up prospects who were interested in the gas appliances I was selling and who asked me to call later. I would race clear across my territory to call on a prospect and then race back to the other end to call on another, without making any effort toward saving this time. I also found myself knocking off early and making excuses for so-called "bad days."

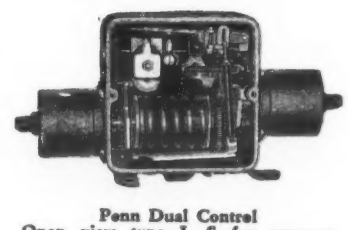
My Personal Equipment

I keep a record of the sales I make from month to month and year to year. I also keep records regarding the sales I make of various kinds of appliances, and use every effort to beat my previous month's sales. For the year of 1929 I have set my quota of sales at $100,000,

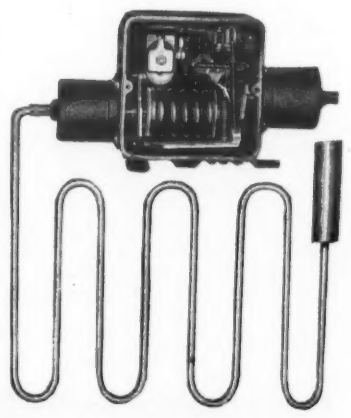
(Continued on Page 23, Column 1)

Dual Control

the Penn Magnet Switch . . . *for temperature and pressure regulation with Safety Cutout*



Penn Dual Control
Open view type L S for pressure regulation.



Penn Dual Control
Open view type L S T for temperature regulation.

Here is a highly perfected device that furnishes high pressure safety cut-out in addition to the regular temperature or pressure control, both in one compact unit.

An outstanding feature of this control is that the high pressure safety cut-out is entirely independent of the controlling mechanism. The high side of the control operates free of the low and adjustments in the low do not affect the high side.

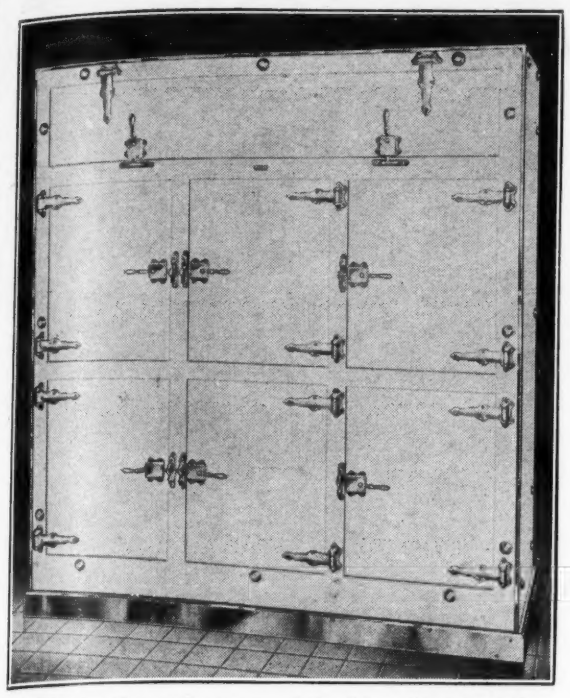
The safety mechanism may be supplied to cut-out at any desired pressure up to and including 185 lbs. The low side range is from 20 inches vacuum to 30 lbs. pressure. The operating differential may be varied from a minimum of 1½ lbs. to a maximum of 25 lbs. Type L S controls employ the unique Penn Magnet Contact unusually sensitive to pressure and temperature changes, yet capable of handling loads up to and including 1½ Horse Power, Single Phase, Alternating Current Motors and 1 Horse Power Direct Current Motors at 110 or 220 volts.

By using the Penn Magnet Switch, manufacturers can eliminate automatic starters that have been necessary on motors from ½ to 1½ Horse Power. Dual controls may be used for both commercial and domestic refrigerators, multiple hook-ups and general commercial work. Remember, Penn Controls are listed as standard by Underwriters' Laboratories. Write today for complete information on these better switches and the Quickfreeze Attachment for cold control in electric refrigerators.

PENN ELECTRIC SWITCH CO.
DES MOINES, IOWA

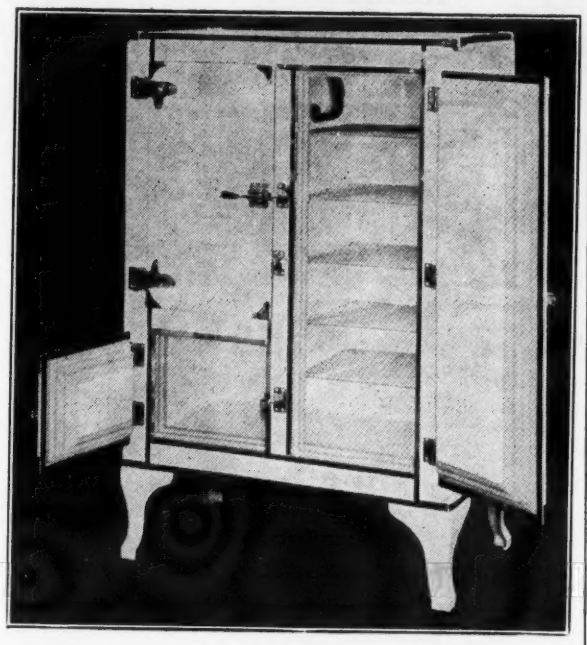
An organization of proven engineering ability that supplies the largest and best concerns of the country with automatic control switches.

Ward



NEW all-metal commercial cabinet by Ward Refrigerator & Mfg. Co., 6501 S. Alameda St., Los Angeles, Calif. The exterior is heavy galvaneal, finished in white lacquer, interior is white enamel, sprayed on rust proof metal. Hardware is individually fitted of pressed brass, heavily nickeled, roller type locks, long strap hinges and large pins. This cabinet is insulated with corkboard and is designed for use with the overhead coil system.

Robinson



MODELS Nos. 47 MP and 51 MP, manufactured by Robinson Refrigerator Works, 3612 W. Pershing Road, Chicago, Ill., have cubic contents of 7.3 and 10 cu. ft., respectively. The new Robinson models are introducing "Pickpoint" construction, which embodies a device that registers the safety point by permitting the thermally responsive portion of a thermometer to be exposed inside the refrigerator, while a dial on the outside records changes in temperature.

HOW STAR APPLIANCE SALESMAN PLANS TO TOP $100,000 QUOTA

(Concluded from Page 22, Column 3)

the greatest percentage of which must be retail sales.

My working tools include a picture book with leather cover containing photographs and descriptions of everything that I sell, such as Electrolux refrigerators, gas ranges, water heaters, incinerators, heaters, etc. I also carry literature of all appliances, service applications, contract blanks, a rule, screw driver, and a small flashlight. Each morning a check is made to be sure everything is complete.

My Day's Work

I prepare my day's work one day in advance. I canvass each morning and make my appointment calls in the afternoon and at night. I make a canvass of my territory twice a year and have a complete card record of every customer, each address, and other valuable data. These cards show what calls I have made and what appliances were sold.

The customers I have sold are my best prospects for the sale of other appliances, and they also help me make sales to their best friends.

My Approach

Every woman is suspicious of a man that comes to the door and the man who tries to make a sale at the front door is absolutely out of luck. In our business we must see the kitchen, cellar and pantry. We must find out what is needed without asking questions. There is only one way to secure this admission and that is to give the customer something for nothing. That, I find, is some service.

I go up to the door, ring the bell, and then wait. Sometimes women come to the door, but generally they open a window upstairs and ask what is wanted. I tell them I am from the Public Service Company making a service call to see if all appliances are satisfactory. Using this plan, I always get in the house.

The customer generally takes me into the kitchen and asks me what I want to inspect. I answer then it is not an inspection call but a service call. I check the gas range, and note what adjustments are needed. I then go to the cellar and examine the meter, meanwhile looking at the hot water boiler and hot water heater. Coming upstairs again, I casually examine the ice box and tell the customer the results of my survey.

How Sales Are Made

Now in making my survey, I have noted all the troubles with the appliances and any grievance that the customer may have against my company. These grievances I take care of immediately, thereby winning the confidence and appreciation of the customer. In addition, I have a complete list of articles that I can sell later, for instance: An old ice box offers a prospect for Electrolux; laundry done at home presents a chance to sell a laundry dryer; garbage problems might mean a new incinerator; a dirty fireplace opens the way for a heater; and so on down the line.

Now, many may think I have only the best of homes and customers in the millionaire class. This is not the case. My customers are only of moderate means and therefore I preach and practice the slogan, "Buy once and buy wisely."

Selling at Wholesale

Long ago I found I could not depend on wholesale business entirely. This is too indefinite. I do not, however, neglect my builders but I cannot give them more than ten minutes of my time. I tell them of our appliances and make a definite appointment to call at the office and see one of our floor representatives. Meanwhile I give our representative full information on the prospect, and ask him to sell only the better type of equipment.

For instance, builders in my territory who were buying $40 and $50 ranges are now buying $75 and $80 ranges. They know that the buyers of homes are impressed with quality articles and that a cheap appliance reflects on the rest of the house. Don't be afraid to tell them so. If they don't know the value of this advice, it's up to you to educate them.

A Few "Don'ts" to Remember

The story of how I make sales is rather hard to explain as each particular case is different. No cut and dried speech is necessary. For the salesman who honestly wants to increase his earnings, however, I would offer a few "Don'ts" for future guidance. These I observe strictly and earnestly recommend them:

Don't go to the back door when calling at a customer's house. You are no ordinary peddler.

Don't try to sell as soon as the door is opened. You must get in the house first.

Don't try to sell anything until you have looked over all the gas appliances. In selling a range you may lose the sale of a water heater.

Don't be afraid to tell your story clearly and tell all of it.

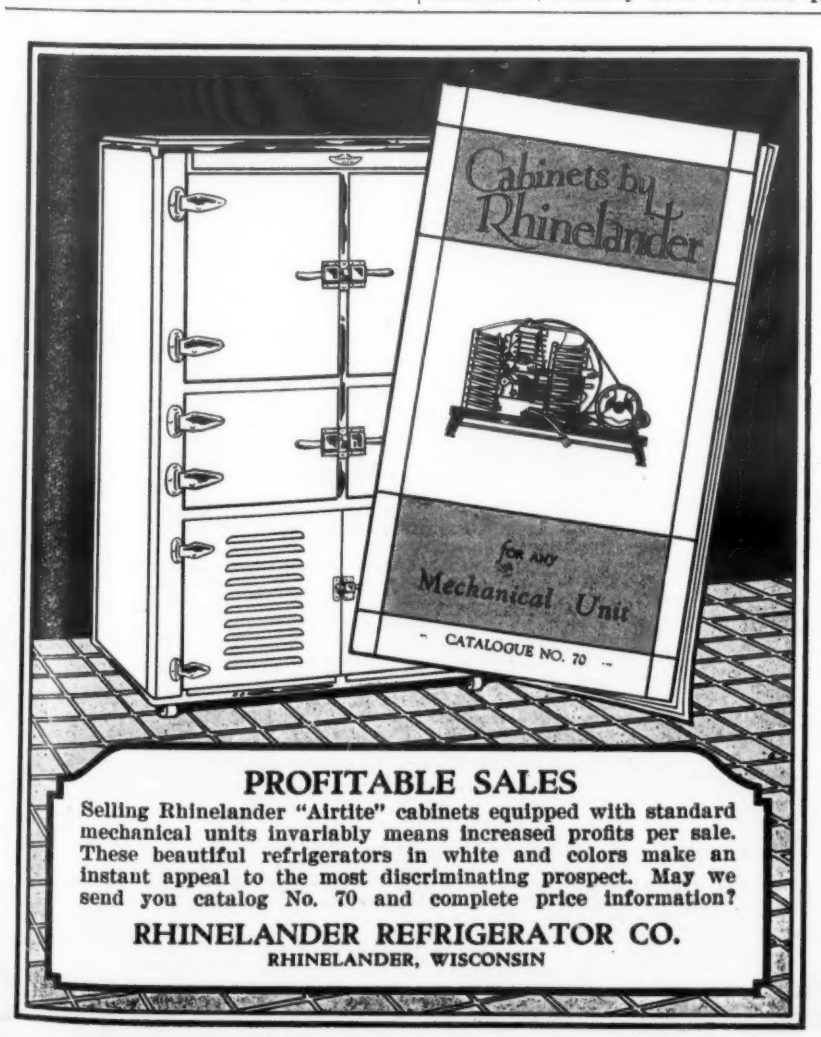
Don't be afraid of time. Stick to your customers.

Don't let a sale "cool off"—keep right after it.

Don't insult a customer by offering low priced equipment—they always want the best.

Don't be afraid of rain or snow. These are the best days.

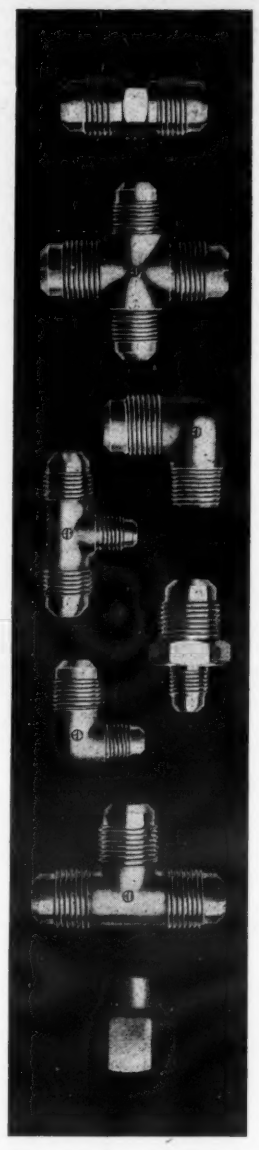
I could offer many more "don'ts" but a salesman must not be too restricted. After all, there are no set rules for good salesmanship. But always remember that systematic canvassing done daily will decide the size of your pay check. Keep your own records—they are your livelihood. Keep them in such a manner that you know who you have seen and when to see them again. Your boss may keep your records in good shape, but not as you would keep them. Don't expect someone else to run your job for you. It is your business and it all depends on how you run it—how much money you will make.



PROFITABLE SALES

Selling Rhinelander "Airtite" cabinets equipped with standard mechanical units invariably means increased profits per sale. These beautiful refrigerators in white and colors make an instant appeal to the most discriminating prospect. May we send you catalog No. 70 and complete price information?

RHINELANDER REFRIGERATOR CO.
RHINELANDER, WISCONSIN



FORGED BRASS FITTINGS

To handle methyl chloride, sulphur dioxide, iso-butane, butane, ethyl chloride, methylene chloride, carbon dioxide, or other similar refrigerants requires fittings that are

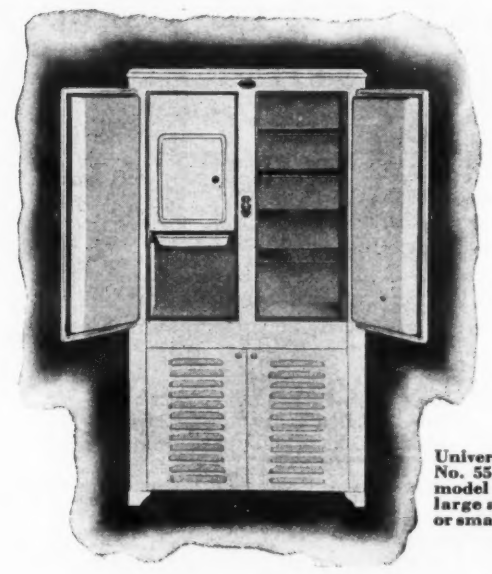
Seepage Proof

Commonwealth Brass Fittings for Automatic Refrigeration are hot forged under tremendous pressures. They are non-porous; of close granular structure, homogenous composition, and exceptional strength.

Send for Catalog No. 36

COMMONWEALTH BRASS CORPORATION
Commonwealth and G. T. R. R.
Detroit, Mich.

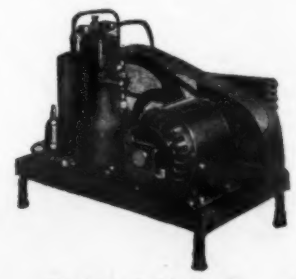
Universal Coolers



Universal Cabinet No. 55. Two-door model suitable for large apartments or small homes.

~are built Right *and work* Right

THE Universal Cooler Line; which contains an unusually complete range of household cabinets, ice cream cabinets and compressors; is built as it should be built, following principles proven by our years of specialization in electrical refrigeration. That is why the most that anyone can receive in dependable, quiet and economical electric refrigeration is always given by Universal Coolers.



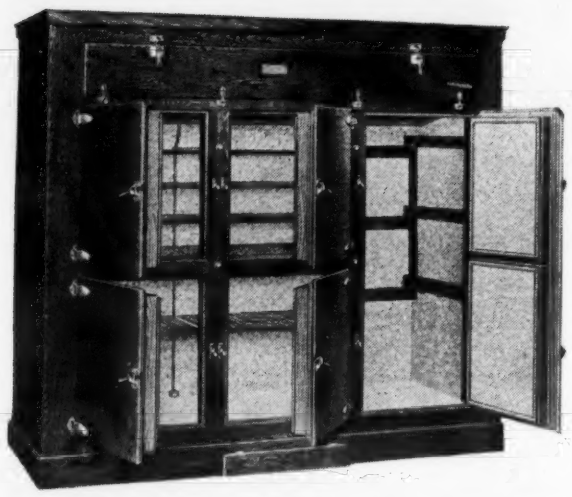
Universal ¼ H. P. Standard Compressor

Universal Cooler Corporation

Detroit, Mich. - - - Windsor, Ontario, Canada

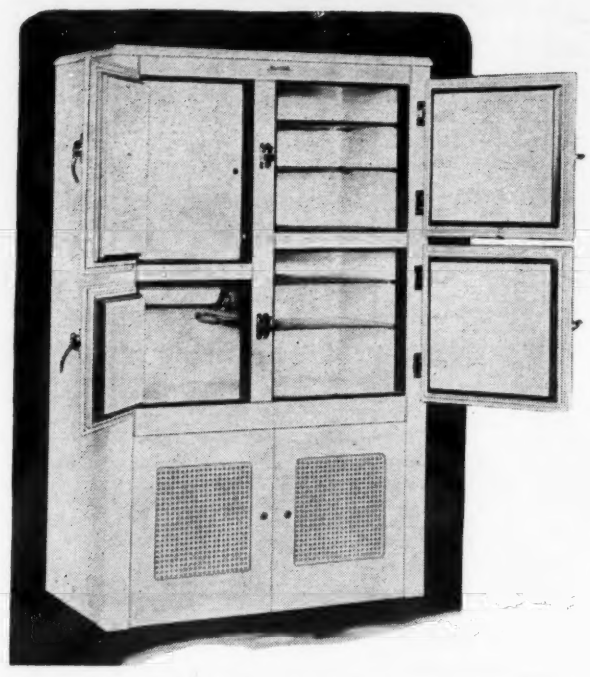
Additional Examples of New Refrigerators

Leonard



COMMERCIAL cabinet No. 9218, one of forty-four models manufactured by Leonard Refrigerator Co., 1545 Clyde Park Ave., Grand Rapids, Mich.

Alaska



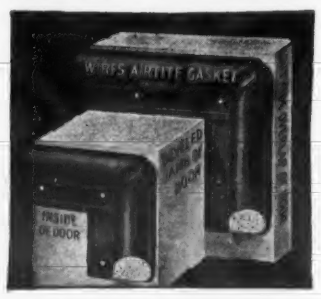
ALL-PORCELAIN model No. 1240 refrigerator offered by Alaska Refrigerator Co., Muskegon, Mich. The Alaska line contains twenty-three models designed for self-contained and remote installation.

Offered by Leading Cabinet Manufacturers

Gibson

CABINET designed for electric refrigeration by Gibson Refrigerator Co., Greenville, Mich. This company offers 36 Standard models, having food capacities from 4 to 9 cu. ft.

Wirfs PATENTED
"AIRTITE" GASKET



assures

Electrical Refrigeration Efficiency

An electrical unit is only as efficient as the box in which it is installed. Poor door contacts on wood or metal boxes hinders its efficiency and increases operating costs.

WIRFS CORPORATION
135 S. 17th St. St. Louis, Mo.

An Important Market for Cabinets in Cuba

Twenty-two foot bar in Blanco-Campo-y-Cia, Santa Clara, Cuba, is equipped with a Servel unit

Mineral Wool

Low in Thermal Conductivity and Low in Cost

The exceptionally low thermal conductivity of Mineral Wool (6.3 B.T.U.) as determined by the U. S. Bureau of Standards, stamps it as the ideal insulating material for

Cold Storage Construction

It assures perfect insulation and maximum efficiency at a low cost.

Mineral Wool is entirely mineral, indestructible, vermin-proof and easy to apply.

Sample and descriptive folder upon request.

U.S. MINERAL WOOL CO.
280 Madison Avenue, New York
Western Connection: Columbia Mineral Wool Co., South Milwaukee, Wisconsin

FOR EASTERN DEALERS
WE MAINTAIN THE LARGEST STOCK OF FITTINGS AND TUBING IN THE EAST. GET OUR CATALOGUE AND PRICES.
DOMESTIC UTILITIES
DIVISION OF THE REFRIGERATION CORP. OF MARYLAND
Plant and Offices—Arlington, Baltimore, Maryland

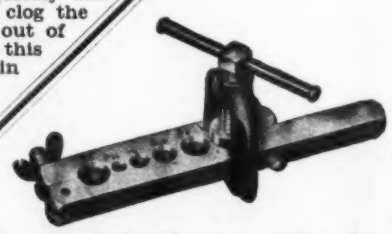
Three Aids To Better Joints

Imperial Tube Cutter

Here is a highly efficient tool for cutting copper, brass, block tin and lead tubing. It takes all sizes of tubing from ⅛" to ⅝" and makes a right-angle cut, quickly and cleanly, leaving no burrs or chips to clog the line. The tubing does not become out of round as when put in a vise. When this tool is used, tubing can be cut in half the time required by old methods and a far better job results. No. 94-F Tube Cutter, each $2.50

Brass Forgings

Accurately made to meet all the requirements of Iceless Refrigerator Manufacturers. Will not leak. Let us quote on your requirements.



Imperial Flaring Tool

The Imperial Flaring Tool gives the proper flare and taper to the tubing for making up joints. A perfect flare means a tight joint, and this tool does the work in the least time and with the utmost simplicity. No loose dies—no vise necessary.
No. 93-F takes tubing sizes 7/16", 3/16", 1/4", 5/16", 3/8", and 1/2", each $3.00
No. 95-F takes tubing sizes 1/4", 5/16", 3/8", 1/2" and 5/8", each $4.00

IMPERIAL BRASS MFG. CO., 565 So. Racine Ave., Chicago, Ill.

KELVINATOR OFFICIALS FLY TO COAST CONFERENCES

Spokane, Wash.—G. W. Mason, president and general manager, and H. W. Burritt, vice-president in charge of sales, Kelvinator Corp., Detroit, Mich., accompanied by Gordon Malone, district manager, Seattle, Wash., recently held a one-day sales conference with Tull & Gibbs, distributors for Kelvinator.

Similar conferences will be held in other coast cities and the trio will travel south to California via air.

CANADIAN COMPANY PLANS EXPANSION; SALES GAIN

Windsor, Canada.—Universal Cooler Co., Ltd., announces a development program for the establishment of new distributors and dealers throughout the Dominion.

Sales figures for 1929 show an approximate increase of 100 per cent over the previous year in the Household division of the company.

PLACES 25 REFRIGERATORS IN NINE AND ONE-HALF HOURS

Amarillo, Tex.—Harry Brown, general manager, and Rex Mahoney, secretary, Panhandle Gas Refrigerator Co., recently supervised the installation of 25 Electrolux units in the Lucerne Apartments, whichare owned by Dr. D. Roach. It required 9½ hours to complete the work.

NEW ELECTRIC SHOP TO SELL FRIGIDAIRE

Brooksville, Fla.—John Law opened an electrical shop, Oct. 21, at the corner of Main and Broad Sts. He is handling Frigidaire.

ONE IN A HUNDRED

This advertisement only concerns men who are able to point to a past record of achievement—**one in every hundred.**

The men we seek do not usually answer advertisements; they do not have to; they have already arrived.

They are willing, however, to consider a genuine opportunity for further development in one of the most lucrative fields originated in the last decade.

We are manufacturers of a well-known line of apartment refrigerators.

Our product has been favorably known for many years as one of the finest in the Refrigerating Field.

Our line includes every requirement in steel and all porcelain domestic refrigerators.

The Product is sold through Public Utilities, Builders, Jobbers and Manufacturers of refrigerating equipment.

The Company is soundly financed.

For the last ten years, the business of the Company has been handled solely by mail and has been concentrated in the Middle West. Recent expansion doubling factory output now necessitates a broader and more comprehensive plan of Dealers distribution, particular emphasis being placed on all principal cities in Southern and Eastern territory.

We offer the benefit of experience that has come to an organization which in eighteen years has reached a place among the leaders of the refrigerating industry.

We believe that the great opportunity afforded by this opening will attract the most capable Distributors who are accustomed to earnings commensurate with the responsibilities.

The Distributors we desire should possess the following qualifications:

A general knowledge of selling and distribution methods based on actual experience with kindred lines.

A competent selling organization large enough to cover territory and able to obtain volume business.

Adequate display space to accommodate necessary samples.

Sufficiently well financed to complete a definite sales program.

Past and present business record must be above reproach.

When writing, give detailed experience in past five years.

Complete information is necessary if we are to judge adaptability to our requirements. Interview will be arranged with Sales Manager.

ADDRESS BOX 208

"Refrigrex" Displayed in Paris Made by Wayne Co.

DOMESTIC refrigeration was prominently displayed by Societe Generale de Material Frigorifique, 147, Blvd. Serurier—at the 1929 Salon des Arts Menagers, Paris. Societe Generale de Material Frigorifique are Paris agents for Wayne Home Equipment Co., Fort Wayne, Ind.

GET A BINDER for your File Copies of The News---$3.75 Each, Postpaid
Electric Refrigeration News
550 Maccabees Bldg. Detroit, Mich.

Time-o-stat Controls Give You An *Added* Sales Advantage~

WHEN you have to make an actual demonstration to clinch a sale you'll find that Time-O-Stat Controls give you an added sales advantage over your competitor. Naturally you selected the unit which had the most outstanding features for its particular application . . . and Time-O-Stat Controls make even the finest refrigerating unit even finer! Their dependability assures your customer's complete satisfaction.

The No. 121 Con-tac-tor Surface switch provides accurate temperature control for the domestic electric refrigerator. It operates through the expansion and contraction of bimetal spiral which in turn, actuates the Con-tac-tor in starting and stopping the refrigerating unit from the temperature of the frost coil or brine tank.

When installed on the return line of the refrigerator it will cut off the machine before a frost back condition can occur. It also can be applied to direct expansion evaporators with excellent results.

Simplicity of construction removes all danger of mechanical failures; moving parts have been reduced to a minimum. Entirely moisture-proof; corrosion or deterioration are impossible. This control has been designed to give a lifetime of useful dependable service, without attention! There's a Time-O-Stat Distributor near you, ready to give you immediate service, helpful cooperation . . . for the distribution of Time-O-Stat Products is nation-wide! So write today for details and catalog.

TIME-O-STAT
CONTROLS COMPANY
ELKHART, INDIANA

Successor to
Absolute Con-tac-tor Corp. Leachwood Company
Cramblet Engineering Corp. Time-O-Stat Corp.

Manufacturers of AUTOMATIC CONTROLS for Oil Burners—Gas Burners—Coal Burners—Electric Refrigerators—Furnace Fans—Mechanical Stokers—Industrial Ovens—Ice Machines—Unit Heaters—Water Heaters . . . Also of Sign Flashers—Mercury Switches—Electric Heaters—Corrugated Metal Bellows.

The Poetic Salesman

It's all the rage, it has the stage,
Thruout this whole creation;
This thing that all, both great and small,
Are calling "Preservation."

The plunks we plank into the bank,
Or in the clock, or some old sock,
To shed the spray some rainy day,
Or keep the howling wolves away.

It's keeping sweet the food we eat,
All safe from germs and little worms;
It guards our health, and saves our wealth,
From things that sneak up shod with stealth.

On land and sea it's used and seen;
In Uncle Samuel's Submarine;
And by and by up in the sky,
They'll use it too; I'll tell you why:

Defying fear, when high or near,
Use it they must, or fall and bust,
The while this little squib they hum,
To Preserve their equilibrium!

This thing that surely has become
The Nation's firm foundation,
Is just another way to say;
"COPELAND REFRIGERATION."

L. D. Powell

WESTERN FRIGIDAIRE MAN DIES

Billings, Mont.—Albert M. Johns, field supervisor for Frigidaire Corp., died at his home, 7 Alderson Ave., Oct. 12. He was 52 years of age. Mr. Johns' death was the result of an influenza attack. He came here four years ago from Bozeman, where he was also affiliated with Frigidaire; previous to that time he had been in business at Wilsall.

LIQUID COOLERS OPENS EXPORT OFFICE

Detroit, Mich.—Liquid Cooler Corp. announces the opening of export offices at 415 Lafayette St., New York, N. Y. These offices are to facilitate the shipping of Temprite coolers to foreign countries, particularly South America, from which the company has received inquiries concerning beverage cooling equipment.

BIRMINGHAM SCHOOL ADDS REFRIGERATION COURSE

Birmingham, Ala.—Night Division of public schools is now offering a course which covers electric refrigeration as applied to the small type unit.

The course is for service men and salesmen. A refrigeration engineer acts as instructor. Representatives of various electric refrigerator manufacturers will lecture to the class from time to time.

What Makes the Ice Man Hot!

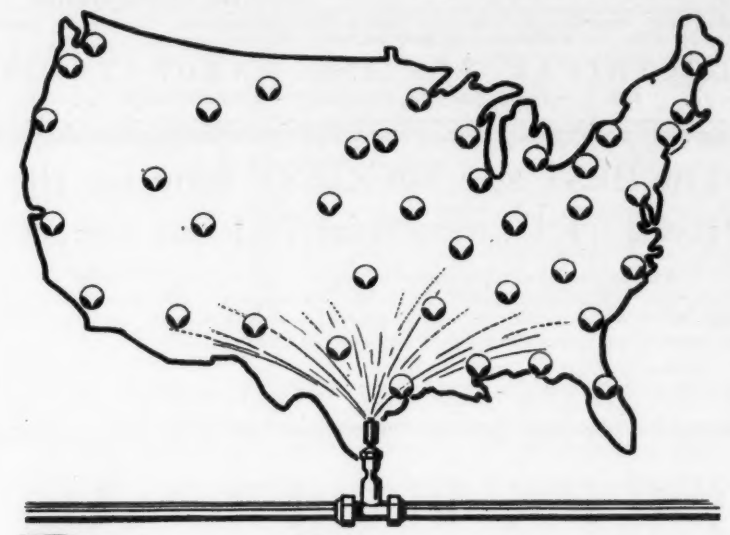
WHEN the Daugherty Supply Company, Kelvinator dealers in Chattanooga, Tenn., secured a live South American Tarantula they could not resist the temptation to use it as an object lesson on the dangers of improper methods for food preservation. The Tarantula was placed in a glass jar in the display window together with an old ice box and a new electric refrigerator. Three display cards told the story as follows:

(1) "This is a live South American Tarantula, the most deadly creature known to mankind.

(2) "This is the old fashioned ice box, which breeds germs that are as deadly as the bite of the Tarantula.

(3) "And this is the new silent Kelvinator, for your health's sake, which do you prefer? Come in and let us show you how easy you can buy the oldest and best electric refrigerator."

The Imitation Food Products Co.
(Branch of The Artistic Production Co.)
107 Lawrence Street
Brooklyn, N. Y.
Ask for our catalog of May 1, 1929. Many new items. Greatly reduced prices. Direct sales only. "Indispensable with refrigerator display."



Distributors Wanted!

AN OPPORTUNITY that comes only once in the history of a business is open for distributors who can qualify. This opportunity makes a special appeal to men who want to get into a new industry on the ground floor—an industry that is not hampered by competition and not limited in sales opportunities. A business that will pay a handsome income for honest effort.

This opportunity is presented in 69 exclusive territories by the National Muellermist Company, a company whose products are manufactured and backed by the great shops of the Mueller Brass Company.

The Muellermist Company has a complete distribution plan and every available sales help for distributors. Handsome illustrated catalogs in full color. Direct mail pieces and sales letters in eight colors. Comprehensive national advertising campaign in such magazines as Saturday Evening Post, House and Garden, and others.

The product is the Muellermist Automatic Underground Sprinkling System for lawns and gardens. Eight to nine months regular business and two to three months contract and follow-up business—an all-year-round big selling proposition that reduces water bills, entirely eliminates labor, and is sold at a price within reach of every home.

A distributor's franchise with Muellermist is conservatively worth $15,000 to $50,000 per year. You are not required to make any exorbitant investment. We do expect our distributors to carry a stock and to be well qualified in sales organization. Write for complete particulars.

"FINER THAN RAIN"
MUELLERMIST

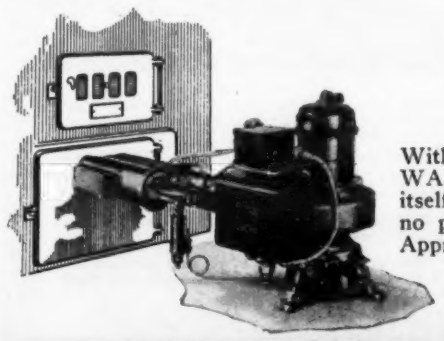
National Muellermist Co.
8735 E. Jefferson Ave.
Detroit, Mich.

Wayne
ELECTRIC REFRIGERATOR

Double Your Sales--and Profits!

To the new, complete, colorful line of Wayne Electric Refrigerators has been added the separate refrigerating units—(Two sizes)—that can be installed in any refrigerator!

This means that every home is now a REAL PROSPECT! That wherever the housewife prefers to retain her own refrigerator—the Wayne electric refrigerating unit can be easily and quickly installed! Want to know more about it? Just drop us a line!



Oil Burners, Too!

With only one moving shaft, the New WAYNE OIL BURNER is in a class by itself! No carburetor, cams, floats, and no part of burner in or under fire box. Approved by National Fire Underwriters! Quick and Easy to install! Big profits for responsible dealers!

WAYNE HOME EQUIPMENT CO.
Fort Wayne, Indiana

E. T. L. Service for Domestic and Commercial Electric Refrigeration

Testing and experimental laboratory service for Manufacturer, Distributor, Central Station — Test data exclusive property of client

ELECTRICAL TESTING LABORATORIES

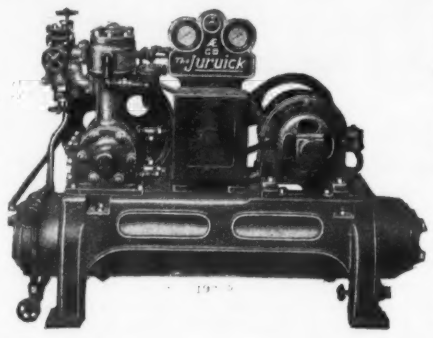
80th Street and East End Avenue, NEW YORK CITY, N. Y.

The BEST and BIGGEST Line for the BIGGEST Commercial Field in America

A complete variety of super-improved equipment for the great Ice Cream and Soft Drink trade, ICE-CREAM CABINETS, SODA FOUNTAINS, RESTAURANT COOLERS, BOTTLE COOLERS, Etc., for use with ALL types of Refrigerating units. *Write for catalogue and prices—state type of machine you make or handle.*

AURORA METAL CABINET WORKS, INC., Aurora, Ill.

JURUICK REFRIGERATION



There is a type for EVERY need

A complete line of JURUICK AUTOMATIC units and AMMONIA COMPRESSORS of one-quarter ton to 40 tons refrigerating capacity provides economical service on big or little refrigeration jobs.

JURUICK insures smooth, silent performance, has automatic control, is easy to operate. It costs little to install and is easy for dealers to sell.

AMERICAN ENGINEERING COMPANY

2420 Aramingo Avenue, PHILADELPHIA, PA.

You will want this efficient delivery help to assist you in cutting down overhead in your business. Write us and give us the line you handle and we will be glad to quote you prices. Charles J. Webb & Company, 116 Chestnut Street, Philadelphia, Pa.

Faster, easier, better deliveries *with* WEBB SLINGABOUTS

DELIVERING refrigerators in Webb Slingabouts cuts delivery costs. It does away with the clumsy method of crating and packing. Only two minutes are required to wrap and strap the refrigerator—then it is ready to go on the truck. When a refrigerator is wrapped in a Slingabout the men can handle it more quickly without injuring hands and knuckles.

Work is just as fast at the other end. The movers unload the refrigerator and squeeze it through the doorways without danger of marring its fine finish or damaging the woodwork of the customer's home. The Slingabout is removed in a jiffy and your men return for the next order. No unpacking mess to clean away in the customer's home, no injured walls and fixtures to repair. And the Slingabout is good for several years!

The protective feature of Webb Slingabouts is what makes them so valuable for safe deliveries. The jacket is made of heavy canvas, padded with cotton, and lined with soft flannel. The finest finish — including porcelain — is safe under this thick, carefully wadded cover. The harness with which the jacket is strapped consists of three-ply canvas belting, triple-sewed, and reinforced with one-eighth inch thick sole-leather. You could use it to move two refrigerators and the harness would be strong enough for the weight of both.

Less work, less cost, greater speed and safety when you deliver refrigerators in a Webb Slingabout.

WEBB *Slingabout*

Sulphur Dioxide! For Direct Charging!

Every Container Analyzed

"Pure" Bone Dry . . . Cylinders 2 to 150 lbs

DRY AS SAHARA

ANSUL Chemical · Co MARINETTE, WIS

Also . . . . Ton Drums-Tank Cars

Fulco REFRIGERATOR COVERS

"FULCO" covers are used by those dealers who realize the importance of making deliveries in perfect condition—without scratches or broken enamel. For they know that complaints mean dissatisfied customers and loss of business.

"FULCO" covers are a real service feature that helps sales and holds trade.

Substantially constructed, heavily padded, box-shaped, providing perfect protection.

Give us the dimensions of your refrigerators, and let us quote special prices on your individual needs. Write our nearest house.

ON AND OFF IN A JIFFY

Fulton Bag & Cotton Mills

Manufacturers Since 1870

ATLANTA · NEW ORLEANS · DALLAS · ST. LOUIS MINNEAPOLIS · BROOKLYN · KAN. CITY, KAN

ESTIMATING METHODS

Tested Tables Save Time in Estimating Commercial Jobs

By L. K. Wright
Member A. S. R. E.

MOST refrigerating and sales engineers are prone to estimate refrigerator problems by the old rule of thumb method, without giving thought to any of the variable factors, such as insulation, running time of the refrigerator unit, square feet of surface, etc.

The following compilation of factors have been used for actual installations and have thus been proven to be correct. By the use of the appended tables it is possible to estimate a prospective installation with accuracy, so that the cost of installing proper apparatus, together with results expected under specific conditions, may be given.

If desired, these tables may be used to chart out a cost sheet, a price being worked out for each individual box and its requirements. The refrigerating unit may be estimated to be erected within twenty feet of the refrigerator, that is, either adjacent to the box or else placed in the basement, below the box. Thus a short run of pipe is used and the insulation used on the cold or return line is reduced to a minimum.

The water and drain lines may be based on the same length of run, that is, twenty feet. If the refrigerating organization uses their own men to effect installation of the electrical equipment, this may also be included in the estimate. It is a simple matter to estimate the cost of any additional distance involved.

Thus the sales engineer or representative is provided with accurate prices, which are immediately available. The usual practice has been to submit a proposal, which takes at least several days. Since these tables cover the majority of installations, it will be found convenient to utilize same, and use them for quotations which will be accurate and give the prospect an assurance that his particular installation is based on data accumulated through actual practice, and not of only theoretical value.

For convenience a standard has been adopted which will be found to fulfill most requirements under normal conditions. Any condition which differs from the standard may be evolved through the use of the correction factors.

The Standard Estimation is based upon data most commonly involved, being:

1. A heat transfer of 3.75 B. t. u. per sq. ft. of refrigerator surface per degree F. temperature difference per day.

2. A temperature difference of 50° F.; the atmospheric temperature estimated at 85° F.; and the refrigerator maintained at a temperature of 35° F.

3. An average usage factor of 1.25, employed to compensate for losses entailed due to opening of doors, introduction of fresh produce, replacement of produce, and lights.

4. The refrigerating unit operated 12 hours per day.

5. A suction pressure of 20 pounds gauge.

6. Standard compressor capacities.

This data does not take into consideration any deck, baffle or any particular coil design, it being found that in the majority of new installations that most refrigerators are equipped with decks and baffles. In the matter of coil design each refrigerating organization has certain ideas concerning the building of coils. Some advocate a spiral design and others oval wall types, although the majority tend to the use of long oval bunker type coils. Therefore no reference is made to coil, bunker dimensions, or deck or baffle construction.

The refrigerating unit, or, more properly, the compressor rating, is based upon A. S. R. E. standards, while other conditions which govern the rating, such as suction pressure and coil temperatures, are provided with correction factors.

COMPRESSOR CAPACITIES

TONNAGE	B. t. u. per hour
⅛	1,500
¼	3,000
⅓	4,000
½	6,000
¾	9,000
1	12,000
1⅛	13,500
1¼	15,000
1⅓	16,000
1½	18,000
1¾	21,000
2	24,000
2¼	27,000
2½	30,000
2¾	33,000
3	36,000
3¼	39,000
3½	42,000
3¾	45,000
4	48,000
4¼	51,000
4½	54,000
4¾	57,000
5	60,000

SUCTION PRESSURES

Based on temperature required in coldest unit of the system.

Temperature of Air Unit	Temperature of Brine Unit	Suction Pressure Pounds	Per Cent Rated Capacity Developed by Compressor
50°	..	26	118
45°	..	24	112
40°	..	22	106
35°	16	20	100
30°	14	18	93
25°	12	16	86
20°	9	14	80
15°	6	12	74
10°	4	10	68
5°	0	7	59
0°	5	5	53

PRESSURE FACTORS

26 lbs.	1.40
24 lbs.	1.25
22 lbs.	1.10
20 lbs.	1.00
18 lbs.	.90
16 lbs.	.85
14 lbs.	.80
12 lbs.	.75
10 lbs.	.70
7 lbs.	.60
5 lbs.	.55

Using above suction pressures, the coilage may be multiplied by the adjoining factors.

The refrigerator is best examined by drilling through a side wall with a ¾" bit and determining the thickness and condition of the insulation. Most refrigerators of modern construction fall into the standard class, for the greater part are insulated with from 3 to 4 inches of cork.

VARIOUS LEAKAGE FACTORS

(Good)	3. or lower	.80
(Medium)	3.5	.93
(Standard)	3.75	0.0
(Fair)	4.0	1.06
(Poor)	4.5	1.20
(Bad)	5.0	1.6

Multiply the load and coilage by the above factors, to obtain data on refrigerators having other than standard insulation.

Refrigerators of the "bad" class should be reinsulated to obtain a satisfactory installation, rather than to utilize a great amount of coilage and a larger unit.

Through the use of automatic apparatus, which operate when there is demand for refrigeration, compressor units may operate over longer periods. The charts and factors incorporated herein are based upon the installation of automatic units, estimated to operate 12 hours per day. For operating periods other than this (12), the following factors will provide proper corrections:

UNIT OPERATING PERIOD

(For load and coilage)

6 hours	2.0
8 hours	1.5
10 hours	1.2
12 hours	1.0
14 hours	.86
16 hours	.75
18 hours	.67
20 hours	.60
24 hours	.50

The refrigerator is assumed to operate at a temperature of about 35 degrees F. This temperature is the most satisfactory for all around purposes, and is used as the standard. For other temperatures the appended corrective factors may be employed.

REFRIGERATOR TEMPERATURE FACTORS

(Outside Temperature 85° F.)

Box Temperature	Multiply Load by	Coil by
55	.6	.36
50	.7	.47
45	.8	.60
40	.9	.77
35	1.0	1.00
30	1.1	1.33
25	1.2	1.83
20	1.3	2.70

Reducing the previous data, based on the adapted standards, to the simplest form, the following formulas are evolved and may be used for rapidly estimating coilage and load:

Machine Load, per hour = 19.53 x S
Feet of 1" Coil = .781 x S
Feet of 1¼" Coil = .620 x S
(S = Square Feet of Box Surface)

Example of the use of tables:

A box of 1,500 square feet has walls which warrant a leakage factor of 3.0, and owner is desirous of operating the unit 16 hours per day and requires a temperature of 30 degrees F. in the refrigerator.

The tables give the load as 39,297 B. t. u. per hour, and diclose that 1,171 feet of 1" coil, or 930 feet of 1¼" coil, is required.

The Leakage Factor Table gives a correction of .80 for load and coilage, under the given conditions.

The Unit Operating Period Factor Table gives a correction of .75 for the load and coilage, under the above conditions.

The Refrigerator Temperature Table gives a correction of 1.1 for load and 1.33 for the coilage, under the conditions prescribed.

Thus: Load = 29,297 x .80 x .75 x 1.1 = 19,336 B. t. u. per hour and a unit of 2 tons should be furnished.

Coilage = 1171 x .80 x .75 x 1.33 = 935 feet of 1" Coil.

DATA SHEET

Box Surface	B. t. u. per hour	Feet of 1" Coil	Feet of 1¼" Coil	Tonnage of Unit
50	997	39	31	⅛
75	1465	59	46	⅛
100	1953	78	62	¼
125	2441	98	78	¼
150	2930	117	93	¼
175	3418	137	109	⅓
200	3906	156	204	⅓
225	4395	176	140	½
250	4883	195	155	½
300	5859	234	186	½
350	6836	273	217	¾
400	7813	313	248	¾
450	8789	352	280	¾
500	9766	391	310	1
550	10742	430	341	1
600	11719	469	371	1
650	12695	508	403	1⅛
700	13672	547	434	1¼
750	14648	586	465	1¼
800	15625	625	497	1⅓
850	16602	664	527	1½
900	17578	703	557	1½
950	18553	742	590	1¾
1,000	19531	781	620	1¾
1,100	21484	859	680	2
1,200	23438	938	743	2
1,300	25391	1016	855	2¼
1,400	27344	1094	868	2½
1,500	29297	1171	930	2½
1,600	31250	1250	992	2¾
1,700	33203	1328	1074	3
1,800	35156	1406	1116	3
1,900	37109	1484	1178	3¼
2,000	39063	1563	1240	3½
2,100	41016	1641	1302	3½
2,200	42969	1719	1364	3¾
2,300	44922	1797	1426	3¾
2,400	46875	1875	1488	4
2,500	48828	1953	1550	4¼
2,600	50778	2031	1612	4¼
2,700	52731	2109	1674	4½
2,800	54684	2187	1736	4¾
2,900	56437	2265	1798	4¾
3,000	58590	2343	1860	5

Gas Utility Men See Advantages of Related Merchandise Appeal

WHEN the American Gas Association convened in Atlantic City, N. J., Oct. 14, this Sparklets exhibit was on display in connection with Electrolux refrigerators. Many officials of gas utilities who attended the convention expressed intentions of featuring Sparklets as standard equipment for Electrolux units during November and December sales. More than one thousand people visited this exhibition during the four days

CHROMIUM PLATING UNDER SUPERVISION OF PATENT OWNERS

THAT chromium-plating as a commercially practical process appeared on the industrial scene at the psychological moment, when the American manufacturer began to realize the importance of breaking down sales-resistance by endowing products with an attractive appearance, is the belief of William Crawford Hirsch, expressed in an article, "Chromium—Its Uses in the Electrical Industry," which appears in October, 1929, issue of *Electrical Manufacturing*.

The industrial need for metal surfaces that are ornamental as well as protective, is causing the laboratory discovery of electrodeposition of chromium to be developed upon a commercial basis. Bunsen, who has a battery cell named for him, is generally credited with the discovery of electrodeposition of chromium.

"Chromium occurs in nature only in combination with other elements," Mr. Hirsch states, "chromite being the only important mineral from which chromium is derived. Rhodesia and New Caledonia yield most of the higher grade chromite. There are chromite deposits in California and Oregon, but they are not high grade and cannot be profitably operated.

"Slight quantities of chromium suffice for the covering of extensive surface areas. The heaviest consumption of chromite is in the manufacture of ferrochrome, in which alloy form chromium is introduced into steel as a hardener and as a means of making it "rustless" or "stainless." Refractories, especially super-refractories, used for the lining of electric furnaces, also consume large quantities of chromium, while many chemicals, pigments and dyestuffs contain a high percentage of it."

Electrical manufacturers know chromium best because of its use as an alloy with nickel in the manufacture of heating elements and resistance wire. High reflectivity and wear-resistance first attracted the attention of the electrical industry to advantages of the finishing process. Low coefficient of friction and resistance to corrosion, which minimize the effect of rubbing wear in moving parts and lengthen useful life of moulds, dies and tools, are the two reasons for the extensive use of chromium today. When used for decorative effect it is generally plated in a thin coating over nickel plate or directly over copper, nickel-silver and kindred alloy.

Chromium-plating, he pointed out, requires a higher current density than other metals used in electricdeposition and authorities agree that it not only requires somewhat different equipment to overcome the action of the chromic acid, but that technical supervision or tutelage of a higher order is essential to success. Thus, chromium-plating consumes more power than is used in the electrodeposition of other metals, but commercially, especially in mass production, power consumption is only a minor cost factor.

As limits in chromium-plating can be held to narrow tolerances, to within .0001 in., it can, therefore, be regulated to bring undersize parts up to a specific thickness or diameter.

Commercial chromium-plating is barely five years old, but the demand for it has advanced so steadily that today several hundred specialty establishments, as well as a large number of manufacturing plants, profitably operate their own chromium-plating departments. These departments are under technical supervision of owners of chromium-plating process patents, who license both jobbing and consuming plants.

IF IMPROVED REFRIGERATION COMES

(Reprinted from *Detroit Free Press*, Oct. 25, 1929)

MUCH good work has been done in the last few years in the matter of determining what constitutes the most beneficial diet, but a great food problem still to be solved is that of more rapid distribution of perishable foods or the discovery of some process of refrigeration which will preserve meats, vegetables, fish and fruits longer in a state of original freshness. It is therefore interesting to learn that chemical laboratories have been busy working at a number of processes, and that some of these promise satisfactory results, in the opinion of the scientists concerned. These processes, it is reported, freeze products to about 50 degrees below zero and the freezing is done so quickly that, after the thawing-out, both the flavor and form of the foods are retained.

If inventions are perfected and adapted to practical use, it is not hard to envisage a new food era in which many of our edibles will be sold in made-up packages, just as most of the less perishable foods are. Meat and fish may come to us in boxes, as cereals do, and the butcher's block may go into the discard with a number of other formerly useful articles.

Possibly a more far-reaching effect of the development of new systems of refrigeration will be the introduction of a number of tropical foods which grow cheaply and profusely on their native soils, but which are practically unknown to the average person in the more moderate climates because of their high cost. Food specialists already have realized that many of these tropical products have extraordinary nutritive value, as well as excellent flavors.

The world has been eating pretty much the same food for a long time, and the average table varies little except in the preparation and service of a limited choice of eatables. With a refrigeration process that would circumvent space and time, we might look forward to new gastronomic thrills in the shape of some little known, but very succulent, meats and fishes which hitherto have been enjoyed only by aboriginals and hunters in the waste spots of the earth.

FORMULAS FOR SIZE OF CABINETS GIVEN IN TRAINING COURSE

The home training course in electric and gas refrigeration conducted by the Utilities Engineering Institute, 4403 Sheridan Road, Chicago, includes as part of its service complete information covering the design and construction of both domestic and commercial cabinets.

Numerous tables, charts and diagrams give the insulating values of the various materials and combinations of materials. Simplified methods of computing leakage losses and estimating cabinet and refrigeration requirements are presented in a manner which anyone can easily learn. All higher mathematics have been eliminated by the substitution of simple equations and formulæ. There is also a practical treatise on the reading of blue prints and estimating from architects' plans.

The salesman who can make accurate estimates out in the field while he is interviewing a prospect conveys the necessary confidence to his prospect, which helps to quickly close the deal. This eliminates the need of apologizing for his inability to estimate and makes it unnecessary for a second sales engineer to help close the sale.

For the small dealer who must rely upon his own ability to offer a profitable estimate in keeping with local competitive conditions, this information will be of daily use.

ELECTROLUX MEN PLAN 1930 SALES PROGRAM

Evansville, Ind.—The annual sales convention of the Electrolux Division of Servel Sales, Inc., will be held here Nov. 11-13, inclusive. The entire national sales organization, comprising zone supervisors, district managers and special sales representatives will be in attendance.

The business sessions of the convention will cover two full days. Special entertainment has been arranged for evenings, and the convention will be concluded with a formal banquet. The third day will be devoted to a golf tournament and special trips through the factory.

H. W. Foulds, vice-president in charge of distribution, will preside at the meeting. The convention committee working under Mr. Foulds is headed by George L. Roach, assistant sales manager; C. A. Miller, R. R. Guenther, A. H. Remsen, T. A. Flaherty, H. S. Boyle and W. A. Rorison.

TORONTO UTILITY GIVES GAS REFRIGERATOR TO SCHOOL

Toronto, Canada.—An Electrolux refrigerator was recently donated to the Central Technical High School for use in the school's model diet kitchen, by the Consumers Gas Co. of Toronto.

This is a National Message to the American Housewife

Get the most out of your ELECTRIC, GAS *or* ICE *Refrigerator*

Send $1.00 for the two big 50c rolls (West of Missouri and South Coast States 60c per roll, both for $1.20 postpaid).
FREE: When ordering mention this ad for a Miracle Paper Dish Rag and interesting samples for You and Your Friends.

Your refrigerator will serve exactly and according to intelligent use and operation, and your palatable, health building foods will speak for themselves when served.

Are you using both KVP Refrigerator Papers? Try the famous pair—Heavy Waxed Paper in "Cutter Box"—it seals tight (one sheet will do) keeps the moisture in or keeps the moisture out as desired. However, remember all foods should not be wrapped in Waxed Paper—for 100% results you also need KVP Household Parchment, the waterproof paper for cooking and for wrapping all moist, greasy and wet foods—a cheesecloth substitute (you can boil it) like a rag when wet—use it again and again—it wears.

Try your Grocer, Stationer, Hardware, Department Store and Naborhood Merchant first; if they cannot serve you KVP will pay the parcel post.

KVP STANDS FOR "THE WORLD'S MODEL PAPER MILL"
KALAMAZOO VEGETABLE PARCHMENT CO.
KALAMAZOO MICHIGAN U.S.A.
MANUFACTURING WORLD-WIDE FAMOUS FOOD PROTECTION PAPERS

IF you are in any way interested in Electric or Gas Refrigeration ...read the above over twice because it will mean much to you. .. this is our National message to the American Housewife in cooperation with your refrigerator sales campaigns. Write for samples and advertising ideas that sell your refrigerators to new customers and keep old customers interested

PATENTS

U. S. and foreign patent applications filed and prosecuted, searches made, reports as to infringement and validity.

Fifteen years experience as a Patent Attorney in the Refrigeration Art and a thorough knowledge of the Unpublished Art and Past History of the Industry enables me to give advice respecting patents that can only be secured from a Specialist in this field.

Special attention is directed to my experience with the enclosed motor type of machine now rapidly coming into prominence.

H. R. VAN DEVENTER
Patent Attorney and Consulting Engineer
Member of the American Society of Refrigerating Engineers
342 Madison Ave. NEW YORK, N.Y.

You don't need
big words
to sell a refrigerator
that's insulated with corkboard.
Just say:
"Corkboard gives longer life,
faster freezing,
constant cold,
and lower operating cost."

Novoid Corkboard Insulation
CORK IMPORT CORPORATION 345 W. 40TH ST. NEW YORK
"Permanent Protection for All Refrigeration"

Directory of Refrigeration Cabinet Manufacturers

A

Acorn Opalite Metal Specialties Co.,
1052 W. Monroe St., Chicago, Ill.
Trade name.....Acorn
Commercial refrigeration cabinets.

Commercial refrigeration cabinets.
Alaska Refrigerator Co., Muskegon, Mich.
Trade name.....Alaska
Domestic sizes..... 23
Food capacities.....3.85 to 16.5 cu. ft.
Construction ..... Wood
Finish (exterior)...Porcelain, lacquer or enamel
Finish (interior).....Porcelain or enamel

American Ice Machine Co., Glendale, Calif.
Trade name..... Snowbird, American
Domestic refrigeration cabinets

Anderson Showcase Mfg. Co.
321 N. E. Filmore St., Minneapolis, Minn.
Trade name..... Anderson
Domestic refrigeration cabinets
Contruction ..... Wood
Insulation .....Corkboard
Finish (interior)..... Enamel
Commercial wall and walk-in coolers and display cases.

Arlington Refrigerator Co., Arlington, Vt.
Trade name.....Arlington, Arco, Arco-Stone
Refrigeration cabinets.

B

Baldwin Refrigerator Co., Burlington, Vt.
Refrigeration cabinets.

Banta Refrigerator Co., Clearfield, Pa.
Trade name ..... Banta
Commercial refrigeration cabinets, wall and walk-in coolers and display cases.

Belding-Hall Co., Belding, Mich.
Trade name .....Belding-Hall
Domestic sizes..... 19
Food capacities.....4 to 15 cu. ft.
Construction ..... Steel
Insulation ..... Corkboard
Hardware.....Grand Rapids Brass
Gaskets ..... Bosley
Finish (exterior).....Porcelain and enamel
Finish (interior).....Porcelain and enamel
Commercial wall and walk-in coolers and display cases.

Benjamin Electric Mfg. Co.,
111 No. Canal St., Chicago, Ill.
Trade name .....Crysteel
Domestic sizes 6
Food capacities.....3.5 to 20 cu. ft.
Construction ..... Steel
Insulation.....Corkboard, Dry-Zero, Celotex
Hardware ..... Grand Rapids Brass
Gaskets ..... Bosley
Finish (exterior) .....Porcelain
Finish (interior) .....Porcelain

Bohn Refrigerator Co.
1350 University Ave., St. Paul, Minn.
Trade name .....Bohn
Domestic sizes 6
Food capacities.....5 to 12 cu. ft.
Construction .....Steel and Wood
Insulation .....Flaxlinum
Finish (exterior).....Porcelain
Finish (interior).....Porcelain

Bolton & Hay, 216 Second St., DesMoines, Iowa
Commercial refrigeration cabinets.

Bozman & Bros., R. H.,
1046 Granby St., Baltimore, Md.
Commercial refrigeration cabinets.

Brooks Cabinet Co., Inc.
1028 W. 27th St., Norfolk, Va.
Trade name .....Brooks
Domestic and Commercial refrigeration cabinets.

Buyers Door & Mfg. Co., Ltd.,
374 Pacific Ave., Toronto, Ont., Canada.
Trade name .....Arctic
Commercial refrigeration cabinets.

C

Cameo Refrigerator Corp.,
2151 E. 51st St., Los Angeles, Calif.
Trade name .....Cameo
Domestic sizes 7
Food capacities.....3 to 8 cu. ft.
Construction.....Wood, Metal
Insulation ..... Corkboard
Hardware..Grand Rapids Brass, National Lock
Gaskets..... Wirfs, Dennis
Finish (exterior).....Enamel, porcelain
Finish (interior).....Enamel, porcelain

Campbell Refrigerator Co.,
3200 Auer Ave., Milwaukee, Wis.
Trade name..... Campbell
Commercial wall and walk-in coolers, display cases, mortuary, hospital and florist refrigeration cabinets.

Challenge Refrigerator Co., Grand Haven, Mich.
Trade name .....Challenge
Domestic refrigeration cabinets.
Construction.....Wood, metal
Insulation.....Corkboard and Cabot quilt
Finish (exterior).....Porcelain
Finish (interior) .....Porcelain
Commercial wall coolers.

Champion Refrigerator Co., Inc.,
206 Lexington Ave., New York, N. Y.
Trade name .....Champion
Domestic refrigeration cabinets.
Construction ..... Metal
Insulation ..... Corkboard
Hardware.....Grand Rapids Brass
Gaskets .....Wirfs
Finish (exterior).....Enamel, porcelain
Finish (interior).....Enamel, porcelain

Cincinnati Butchers Supply Co., Cincinnati, O.
Trade name .....Beauty
Commercial refrigeration cabinets.

Commercial Refrigerator Mfg. Co.,
E. 59th St., Los Angeles, Calif.
Trade name .....Super-Bilt, Super-Cold
Commercial refrigeration cabinets and display cases.

Crosley Radio Corp., Cincinnati, Ohio.
Trade name .....Icy-Ball
Domestic refrigeration cabinets.

Crystal Refrigerator Co., Fremont, Nebr.
Trade name .....Crystal
Domestic sizes 17
Construction .....Steel
Insulation.....Cork and Celotex
Hardware.....Grand Rapids Brass
Finish (exterior) .....Lacquer
Finish (interior) .....Enamel
Commercial wall coolers and display cases.

D

Paul J. Daemicke Co.,
1340 Fullerton Ave., Chicago, Ill.
Commercial wall and walk-in coolers and display cases.

Detroit Butchers Supply Co.,
1455 Gratiot Ave., Detroit, Mich.
Trade name.....Diamond Brand
Commercial display cases.

Dillingham Mfg. Co., Sheboygan, Wis.
Trade name .....Iceberg
Domestic sizes 8
Food capacities.....5 to 9 cu. ft.
Construction ..... Wood
Insulation ..... Cork
Hardware ..... Dent
Gaskets ..... Jarrow
Finish (interior).....Porcelain or enamel

Downing Mfg. Co., Downing, Wis.
Trade name.....Downing
Commercial wall and walk-in coolers and display cases.

Drayer & Hanson, Inc.,
738 E. Pico St., Los Angeles, Calif.
Trade name.....D & H
Domestic and commercial refrigeration cabinets.

Dry-Kold Refrigerator Co., Niles, Mich.
Trade name.....Dry-Kold
Commercial grocers' refrigerators, market coolers and display cases.

E

Eddy & Sons, 339 Adams, Boston, Mass.
Trade name.....Eddy
Domestic refrigeration cabinets.

Ehrlich & Sons Mfg. Co., H., St. Joseph, Mo.
Trade name.....Ehrlich

Elkins Refrigerator & Fixture Co.,
5201 Denison Ave., Cleveland, Ohio.
Commercial walk-in coolers and display cases.
Trade name..... Elkins
Commercial wall and walk-in coolers, display cases and florist refrigerators.

Erie Art Metal Co., Erie, Pa.
Trade name.....Dan-Dee
Domestic refrigeration cabinets.

Eureka Refrigerator Co., Ltd.,
Owen Sound, Ont., Canada.
Commercial wall and walk-in coolers and display cases.

F

Fabien Refrigerator Co., Ltd., C. P.,
2471-85 Ste. Cunegonde St.
Trade name.....Fabien
Domestic sizes..... 6
Food capacities.....6 to 20 cu. ft.
Construction .....Metal and Wood
Insulation.....Balsam Wool, Corkboard, Celotex
Hardware.....
Winters & Crampton, Arcade, Hahn Brass
Gaskets ..... Ladore
Finish (exterior).....Lacquer
Finish (interior).....Enamel

Fairfield Mfg. Co., Fidelity Bldg., Portland, Me.
Trade name.....Evercold
Domestic and commercial refrigeration cabinets.

Federal Asbestos & Cork Insulation Co.,
44th and State Sts., Milwaukee, Wis.
Trade name.....Federal
Domestic and commercial refrigeration cabinets.

Ford Refrigerator Co., Inc.,
219 Mary St., South Jacksonville, Fla.
Trade name.....Ford
Domestic and commercial refrigeration cabinets built to customer's specification.

Fresno Show Case & Fixture Co.,
1805 Anna, Fresno, Calif.
Commercial refrigeration cabinets.

Friedrich, Ed.
1117 E. Commerce St., San Antonio, Tex.
Trade name.....Ed. Friedrich
Commercial wall and walk-in coolers, display cases and florist refrigerators.

Frigidaire Corp., Dayton, Ohio.
Trade name.....Frigidaire
Domestic sizes..... 25
Food capacities.....5 to 18 cu. ft.
Insulation ..... Cork
Finish (exterior).....Porcelain, lacquer
Finish (interior).....Porcelain

G

Garland Refrigerator Co., Inc.,
101 Park Ave., New York, N. Y.
Trade name.....Garland
Commercial custom built refrigeration cabinets.

General Electric Co.,
Electric Refrigeration Dept., Cleveland, Ohio.
Trade name.....General Electric
Domestic sizes..... 11
Food capacities.....4 to 17 cu. ft.
Construction ..... Steel
Finish (exterior).....Sanak
Finish (interior) ..... Porcelain
Commercial refrigeration cabinets.

General Steel Wares, Ltd.,
199 River St., Toronto, Ont., Canada.
Trade name.....S. M. P.
Domestic refrigeration cabinets.

Gibson Refrigerator Co., Greenville, Mich.
Trade name..... Gibson
Domestic sizes 36
Food capacities.....4 to 9 cu. ft.
Construction ..... Steel
Hardware.....Grand Rapids Brass
Gaskets.....Wirfs
Finish (exterior).....Porcelain, lacquer
Finish (interior).....Porcelain, enamel
Commercial wall and walk-in coolers and display cases.

Gloekler Co., Bernard,
1627 Penn Ave., Pittsburgh, Pa.
Trade name..... Gloekler
Domestic sizes..... 6
Food capacities.....5 to 15 cu. ft.
Construction ..... Metal
Insulation .....Sheet cork
Finish (exterior).....Porcelain
Finish (interior).....Lacquer
Commercial wall coolers and display cases.

Gurney Refrigerator Co., Fond du Lac, Wis.
Trade name.....Athermos, Royal Gurney
Domestic sizes..... 13
Food capacities .....5.7 to 60 cu. ft.
Construction.....Wood and metal
Insulation ..... Corkboard
Finish (exterior).....Wood and porcelain
Finish (interior).....Enamel and porcelain

H

Harder Refrigeration Corp., Cobleskill, N. Y.
Trade name.....Kleen Kold, Hudson
Domestic sizes..... 6
Food capacities.....4 to 6 cu. ft.
Insulation ..... Corkboard
Hardware.....Grand Rapids Brass
Gaskets ..... Wirfs
Finish (exterior).....Porcelain
Finish (interior).....Porcelain

Hart & Burmeister,
Jerrold at Napoleon, San Francisco, Calif.
Trade name.....California
Domestic refrigeration cabinets.

Heintz Mfg. Co.,
Font & Olney Aves., Philadelphia, Pa.
Domestic refrigeration cabinets.
Trade name.....Steel Prest
Construction ..... Steel
Insulation.....Cork and Celotex
Finish (exterior).....Lacquer
Finish (interior).....Enamel

Heinz & Munschauer,
20 Superior St., Buffalo, N. Y.
Trade name.....Niagara
Domestic sizes..... 10
Food capacities.....4.75 to 8 cu. ft.
Construction.....Steel and wood
Insulation ..... Cork
Hardware.....Grand Rapids Brass
Gaskets ..... Freydberg
Finish (exterior).....Lacquer
Finish (interior).....Enamel

Herrel & Sons Co., John,
244 Gear St., Columbus, Ohio.
Trade name..... Herrel
Domestic sizes..... 5
Food capacities.....5 to 20 cu. ft.
Construction.....Steel and wood
Insulation ..... Corkboard
Hardware ..... Arcade
Gaskets ..... Dennis
Commercial wall and walk-in coolers and display cases.

Herrick Refrigerator & Cold Storage Co.,
Waterloo, Iowa.
Trade name..... Herrick
Domestic sizes 37
Food capacities .....7.5 to 65.31 cu. ft.
Construction ..... Wood
Insulation ..... Mineral Wool
Hardware ..... Dent
Gaskets .....Wirfs, Bosley
Finish (exterior) ..... Oak
Finish (interior)..Opal glass, porcelain, enamel
Commercial wall coolers and display cases.

Hill & Co., Inc., C. V.,
360 Pennington Ave., Trenton, N. J.
Trade name.....Hill Dry-Cold
Commercial display cases.

Holcomb & Hoke Mfg. Co.,
1545 Van Buren Ave., Indianpolis, Ind.
Trade name.....H & H
Commercial display cases.

Holderle Bros., Inc.,
339 Exchange, Rochester, N. Y.
Trade name.....Honor Bilt
Commercial refrigeration cabinets.

Holmes Products, Inc.,
205 E. 42nd St., New York, N. Y.
Trade name.....Holmes
Domestic sizes..... 4
Food capacities.....4.5 to 9.5
Finish (exterior).....Lacquer

Howe Scale Co., Rutland, Vt.
Trade name..... Howe
Domestic refrigeration cabinets.
Insulation ..... Corkboard
Finish (exterior).....Wood
Finish (interior).....Enamel
Commercial wall and walk-in coolers and display cases.

Hussmann Refrigerator Division,
Allied Store Utilities Co.,
911 N. Broadway, St. Louis, Mo.
Commercial wall and walk-in coolers and display cases.

I

Illinois Refrigerator Sales Co., Morrison, Ill.
Trade name ..... Illinois
Domestic sizes..... 8
Food capacities.....4.8 to 10 cu. ft.
Construction ..... Steel
Insulation ..... Dry-Zero
Gaskets ..... Wirfs
Finish.....Enamel, lacquer and porcelain
Finish.....Enamel and porcelain

J

J-T Manufacturing Co.,
5200 Centennial Blvd., Nashville, Tenn.
Trade name ..... Temco
Domestic sizes..... 3
Food capacities.....5 to 12 cu. ft.
Construction.....Steel and wood
Insulation ..... Corkboard
Hardware.....Grand Rapids Brass
Gaskets ..... Jarrow
Finish (exterior).....Porcelain
Finish (interior).....Porcelain

Jewett Refrigerator Co., Buffalo, N. Y.
Trade name.....Jewett
Domestic sizes..... 37
Food capacities.....7.5 to 45 cu. ft.
Insulation ..... Corkboard
Finish (exterior).....Enamel
Finish (interior).....Solid porcelain

K

Kelvinator Corp.,
14250 Plymouth Road, Detroit, Mich.
Trade name.....Kelvinator
Domestic sizes..... 10
Food capacities.....4.7 to 12.1 cu. ft.
Construction .....Wood, steel
Insulation ..... Corkboard
Finish (exterior).....Lacquer, porcelain
Finish (interior).....Enamel, porcelain
Commercial refrigeration cabinets.

Koch Butchers' Supply Co.,
North Kansas City, Mo.
Trade name ..... Koch
Commercial wall and walk-in coolers and display cases.

L

La Crosse Refrigerator Corp., La Crosse, Wis.
Trade name ..... La Crosse
Domestic sizes 3
Food capacities .....5 to 15 cu. ft.
Construction ..... Steel
Insulation ..... Balsam Wool
Hardware .....Grand Rapids Brass
Gaskets ..... Bosley
Finish (exterior) ..... Enamel
Finish (interior) .....Enamel or porcelain

Leonard Refrigerator Co.,
1545 Clyde Park Ave., Grand Rapids, Mich.
Trade name .....Leonard
Domestic sizes 44
Food capacities .....3.53 to 54.22 cu. ft.
Finish (exterior) .....Porcelain, lacquer
Finish (interior) .....Porcelain, enamel
Commercial wall coolers and display cases.

Liver & Co., 1502 Capital Ave., Omaha, Neb.
Commercial refrigeration cabinets.

Lorillard Refrigerator Co.,
85 Grand St., Kingston, N. Y.
Commercial wall and walk-in coolers, display cases and special refrigeration cabinets.

Louisville Refrigerator Co.,
4460 Louisville St., Louisville, Ky.
Trade name .....White Seal
Domestic sizes 4
Capacities .....2.9 to 4.6 cu. ft.
Construction .....Metal and wood
Insulation ..... Corkboard
Hardware.....Grand Rapids Brass
Gaskets ..... Dennis
Finish (exterior) .....Lacquer
Finish (interior) .....Enamel

M

Mace & Co., Inc., L. H.
55 E. 150th St., New York, N. Y.
Trade name ..... Mace
Domestic sizes 3
Food capacities .....5 to 7 cu. ft.
Construction .....Metal, wood
Insulation .....Insulite, cork
Hardware .....Grand Rapids Brass, Dent
Gaskets .....Wirfs, Dennis
Finish (exterior) .....Lacquer, enamel, varnish
Finish (interior) .....Enamel, porcelain

McCray Refrigerator Co., Kendallville, Ind.
Trade name ..... McCray
Domestic sizes 4
Food capacities .....5 to 20 cu. ft.
Construction ..... Wood, metal
Insulation ..... Corkboard
Finish (exterior) .....Porcelain, oak
Finish (interior) ..... Porcelain
Commercial wall and walk-in coolers and display cases.

Marinette Show Case Co., Marinette, Wis.
Commercial display cases.

Metz Products Corp.,
3051 Rosslyn St., Los Angeles, Calif.
Trade Name ..... Metz
Domestic refrigeration cabinets.

Milburn Refrigerator Co.,
1908 Reed Street, Kalamazoo, Mich.
Trade name ..... Kalamazoo
Commercial wall and walk-in coolers, display cases and florist refrigeration cabinets.

N

Northey Mfg. Co., Waterloo, Iowa
Trade name ..... Northey
Commercial wall and walk-in coolers, display cases, florist and special refrigeration cabinets.

North Star Refrigeration Co.,
Chattanooga, Tenn.
Domestic refrigeration cabinets.

O

Omaha Fixture & Supply Co.,
11th and Douglass, Omaha, Neb.
Commercial refrigeration cabinets.

Ottenheimer Bros., Inc.,
Fallsway and Hiller Sts., Baltimore, Md.
Trade name.....Reol, Oreole
Domestic sizes..... 5
Construction.....Steel, wood
Insulation ..... Corkboard
Finish (exterior).....Oak
Finish (interior).....Porcelain enamel
Commercial wall and walk-in coolers and display cases.

P

Phillips Refrigerator Co.,
393 Keele St., Toronto, Ont., Canada
Trade name ..... Phillips
Refrigeration cabinets.

Polhemus Co., P. B.
110 West 34th St., New York, N. Y.
Commercial display cases.

Progress Refrigerator Co.,
621 W. Main St., Louisville, Ky.
Trade name ..... Progress
Domestic refrigeration cabinets.

Puffer-Hubbard Mfg. Co.,
86th and 32nd Ave., Minneapolis, Minn.
Refrigeration cabinets built to specification.

R

Renfrew Refrigerator Co., Ltd.,
Elizabeth St., Renfrew, Ont., Canada
Trade name ..... Barnett
Domestic sizes 11
Food capacities .....3.75 to 20 cu. ft.
Construction ..... Wood
Insulation ..... Corkboard
Hardware..National Lock, Grand Rapids Brass, Winters & Crampton
Gaskets ..... Dennis
Finish (exterior) .....Enamel
Finish (interior) .....Porcelain, enamel

Rex Mfg. Co., Connersville, Ind.
Trade name ..... Rex
Domestic sizes 8
Food capacities .....4 to 15 cu. ft.
Construction ..... Steel
Insulation ..... Corkboard
Hardware .....Grand Rapids Brass
Gaskets ..... Wirfs
Finish (exterior) .....Lacquer, porcelain
Finish (interior) .....Enamel, porcelain

Rhinelander Refrigerator Co.,
Rhinelander, Wis.
Trade name ....Artite, Rhinelander
Domestic sizes 18
Food capacities .....3.75 to 20 cu. ft.
Construction ..... Wood, metal
Insulation ..... Corkboard
Finish (exterior) .....Porcelain, lacquer
Finish (interior) .....Porcelain, enamel
Commercial refrigeration cabinets.

Robinson Refrigerator Works,
3612 W. Pershing Road, Chicago, Ill.
Trade name ..... Robinson
Domestic sizes 15
Food capacties .....4 to 12 cu. ft.
Construction ..... Steel
Insulation ..... Corkboard
Gaskets ..... Dennis
Finish (exterior) .....Lacquer, porcelain
Finish (interior) .....Enamel, porcelain

Rodgers Refrigerator Works, Fay,
P. O. Box 2573, Memphis, Tenn.
Refrigeration cabinets.

Ruddy Mfg. Co., Ltd., Brantford, Ont., Canada
Trade name ..... Brantford
Domestic and commercial refrigeration cabinets, walk-in coolers and display counters.

S

Sanderson-Harold Co., Ltd., Paris, Ont.
Trade name ..... Paris
Domestic sizes 41
Food capacities .....2.5 to 38 cu. ft.
Construction ..... Wood
Insulation ..... Corkboard
Hardware.....Grand Rapids Brass, Winters & Crampton
Gaskets ..... Ladore
Finish (exterior) ..... Enamel
Finish (interior) .....Enamel, porcelain

Schmidt Co., C.,
John and Livingston Sts., Cincinnati, Ohio
Trade name ..... Thesco
Commercial wall and walk-in coolers and display cases. Domestic refrigeration cabinets built to order.

Savory, Inc., 90 Alabama St., Buffalo, N. Y.
Trade name ..... Savory
Domestic refrigeration cabinets.
Food capacities .....5 to 13 cu. ft.
Construction ..... Metal
Insulation ..... Corkboard
Gaskets ..... Wirfs
Finish (exterior) ..... Porcelain
Finish (interior) ..... Porcelain

Seeger Refrigerator Co., St. Paul, Minn.
Trade name ..... Seeger
Domestic sizes..... 20
Food capacities .....4 to 30 cu. ft.
Construction ..... Steel
Insulation ..... Corkboard
Finish (exterior) .....Porcelain, lacquer
Finish (interior) ..... Porcelain
Commercial wall and walk-in coolers and display cases.

Servel, Inc., Evansville, Ind.
Trade name ..... Servel
Domestic refrigeration cabinets.
Food capacities .....5 to 10 cu. ft.
Construction .....Steel and wood
Insulation ..... Corkboard
Finish (exterior) ..... Lacquer
Finish (interior) ..... Porcelain

Sherer-Gillett Co., Marshall, Mich.
Trade name .....Sherer
Commercial walk-in coolers and display cases.

Smoot-Holman Co., Inglewood, Calif.
Trade name ..... Kool-Kase
Commercial display cases.

Standard Refrigerator Co., Inc.,
2539 Germantown Ave., Philadelphia, Pa.
Commercial wall and walk-in coolers and display cases.

Steel Craft Mfg. Co.,
4617 Arthington St., Chicago, Ill.
Trade name ..... Steel Craft
Domestic sizes 6
Food capacities .....4 to 6.5 cu. ft.
Construction ..... Steel
Insulation ..... Dry-Zero
Hardware .....Grand Rapids Brass
Gaskets ..... Jarrow
Finish (exterior) .....Lacquer
Finish (interior) .....Enamel, Porcelain

St. Louis Butchers & Hotel Supply Co.,
15th & Mullanphy Sts., St. Louis, Mo.
Trade name..... Spray Cold
Commercial wall and walk-in coolers and display cases.

Success Mfg. Co., Gloucester, Mass.
Trade name ..... Success
Domestic sizes 7
Construction ..... Metal
Insulation ..... Balsam Wool
Finish (exterior) .....Lacquer, enamel
Finish (interior) .....Lacquer, enamel

T

Tacoma Metal Refrigerators, Inc.,
741 Broadway, Tacoma, Wash.
Domestic refrigeration cabinets.
Trade name.....TMR
Construction.....Cork & Insulite
Hardware.....Washington Hardware
Finish (exterior).....Lacquer
Finish (interior).....Enamel
Commercial refrigeration cabinets.

V

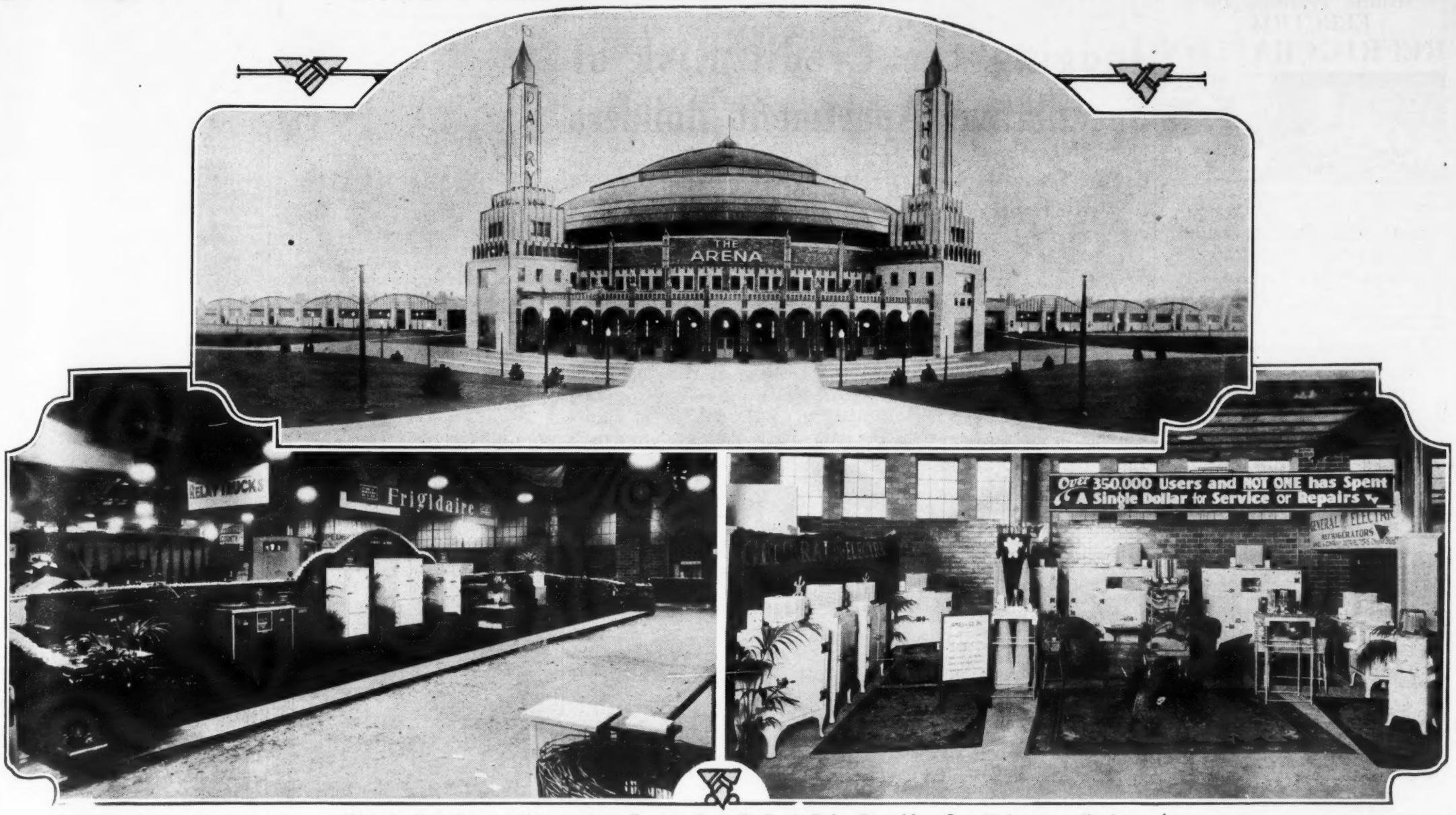
Vogt Refrigeration Co.,
616 Barrett Ave., Louisville, Ky.
Trade name .....Absopure
Domestic sizes 5
Food capacities .....4 to 12 cu. ft.
Construction ..... Steel
Insulation ..... Cork
Hardware ..... National Lock
Gaskets ..... Bosley
Finish (exterior) ..... Duco
Finish (interior) ..... Porcelain

W

Ward Refrigerator & Mfg. Co.,
6501 South Alameda St., Los Angeles, Calif.
Domestic and commercial refrigeration cabinets.

Welsbach Co., Gloucester, N. J.
Trade name ..... Welsbach
Domestic sizes 7
Food capacities .....5.25 to 8 cu. ft.
Construction .....Wood, metal
Insulation ..... Cork
Finish (exterior) ..... Lacquer
Finish (interior) ..... Porcelain

Refrigeration Competes with Livestock for Interest of Farmers



(Above)—New Arena, which was formally opened a t St. Louis Dairy Exposition, Oct. 12, has an auditorium seating capacity of 21,000. (Below—left)—Frigidaire domestic display by Del-Home Light Co.; this company also exhibited Frigidaire commercial equipment, including milk and water coolers and ice cream cabinets. A Gruendler case, Nagle standard and whirlpool coolers, Frigidaire equipped, were included in the commercial display. (Below—right)—Four commercial and five household models were displayed at the Exposition by James & Co., Inc., General Electric distributors. Two models showed coils exposed.

MANUFACTURERS OF
Sheet Metal Parts
To Your Specifications

Bases, Angle Iron to support units.
Guards—to enclose units.
For Household Refrigerators we make outside steel panels, food compartments, etc.
Ice Cream cabinets and parts.

MOTORS METAL MFG. CO.
5936 Milford St. - Detroit, Mich.

SOUTHERN UTILITY PLACES 72 ELECTROLUX UNITS

Birmingham, Ala.—Birmingham Gas Co., Electrolux dealer, has just completed installation of 72 units in the Highland Plaza apartment house.

AUGMENTS LINE OF INSULATION PRODUCTS

Dry-Zero Corp., 130 N. Wells St., Chicago, Ill., has added a new "P" type pliable slab to its standard line. This slab has a conductivity per inch, per square foot, per degree, per hour, of .23 B. t. u.'s and coefficient of moisture absorption of 14.

The "P" type is covered with a stiff but flexible insulation paper. It has a cushion edge for close contact with framing or other slabs.

HOHNER TAKES CHARGE OF TEMPRITE PRODUCTION

Detroit, Mich.—George E. Hohner has been placed in charge of production, as well as experimental and development work, according to a recent announcement made by Liquid Cooler Corp., manufacturers of Temprite Coolers.

Mr. Hohner has been associated with the refrigeration industry for a number of years. He was formerly in the experimental department of Nizer Corp., and later served in the same capacity with Kelray Laboratory.

N. Y. AGENCY GETS FILTRINE ADVERTISING ACCOUNT

Brooklyn, N. Y.—Filtrine Mfg. Co. has appointed Campbell, Lowitz & Whitely, Inc., New York City, to direct its advertising.

To Manufacturers of Electric and Gas Units

If you want CABINETS as you want them let PUFFER-HUBBARD build them. We work to specification.

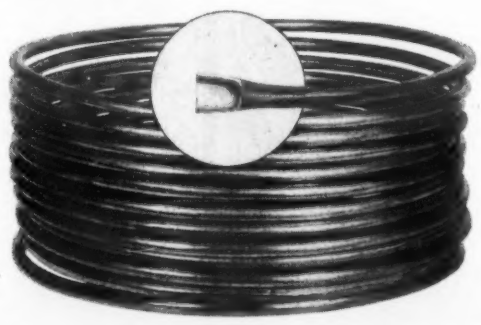
PUFFER-HUBBARD MFG. CO.
MINNEAPOLIS, MINN.

Dehydrated and Sealed Tubing Cuts Time and Trouble

Moisture and scale in the lines is the dangerous enemy of electric refrigeration service. Wolverine solder sealed, dehydrated seamless copper tubing is a quick, economical and lasting answer to the problem.

Wolverine tubing is annealed uniformly, brightly finished inside and out, carefully tested at the factory. It is made to A. S. T. M. Specification (B 68-27T).

Straight Lengths and Coils for Immediate Delivery.



WOLVERINE TUBE CO.
SEAMLESS COPPER BRASS & ALUMINUM

1431 Central Ave., Detroit, Mich.
Phone Cedar 5000

Sales offices in all major cities. Write or phone for name of nearest representative.

WAGNER NAMES IOWA REPRESENTATIVE

St. Louis, Mo.—D. O. Reardon is now representing Wagner Electric Corp., 6400 Plymouth Ave., in 64 Iowa counties, with headquarters in Des Moines.

For the past seven years Mr. Reardon has been Iowa representative for the merchandising division of Westinghouse Electric & Mfg. Co. Prior to that time he was a maintenance foreman for the Bell Telephone Co., Chicago, Ill. He also spent several years in the maintenance department of the Commonwealth Edison Co. He is a graduate of De Paul University.

STORZ CO. LANDS CONTRACT FOR OMAHA APARTMENT

Omaha, Nebr.—Storz Electric Refrigeration Co. has closed a contract for the installation of 22 General Electric refrigerators in the Tudor Arms apartment building. This apartment, located in the Farnam Hill district, was constructed by Traver Bros.

COLLEGE CLUB WOMEN CHOOSE ELECTROLUX

New York, N. Y.—The Pan Hellenic Hotel, New York, home of the eighteen nationally recognized college women's sororities, has chosen Electrolux, the gas refrigerator, for its housekeeping suites. This installation was recently made by the Consolidated Gas Company of New York.

SANITARY CO. INCREASES STORAGE FACILITIES

Fond Du Lac, Wis.—Sanitary Refrigerator Co. recently took a lease on the second floor of the Rock River Canning Co.'s plant, Western Ave., and will use the space for storage.

Drastic Price Reductions
ON
BOHN all-porcelain base cabinet models

WHITE PORCELAIN, OUTSIDE AND INSIDE

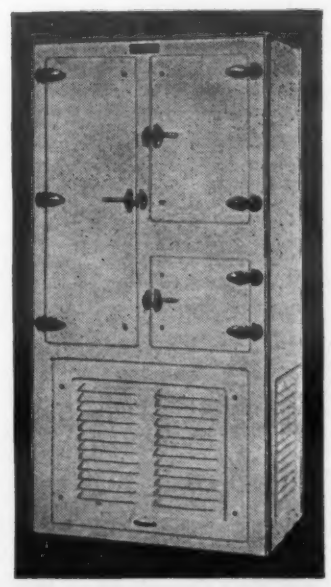
5, 6, 7, 9 and 12 Cubic Feet of Food Storage

The handy base cabinet may either be used for refrigerating machinery or the storage of cooking utensils, canned goods, vegetables, etc.

These beautiful BOHN refrigerators, with their heavy insulation, sturdy general construction, and patented air-circulating principles, are an assurance that your units will render perfect refrigeration and do so economically.

Write for details of these remarkably low prices.

Many models for remote installation are also greatly reduced.



Bohn is the World's Largest Builder of Quality Refrigerators

BOHN REFRIGERATOR COMPANY
SAINT PAUL, MINNESOTA

Manufacturers Praise New, Easy, Practical
Home Training In ELECTRIC REFRIGERATION

Now At Last You Can Learn Electric Refrigeration Under Trained Experts—Right At Home In Your Spare Time. Wonderful Home Training Plan Developed By Utilities Engineering Institute. Approved By Leaders Of Industry Everywhere. Hundreds Of Satisfied Students. Get FREE BOOK At Once—Investigate TODAY!

Big Money For Trained Men

THE one big drawback in the Refrigeration Industry is the scarcity of trained men to fill the big positions. This creates an opportunity for ambitious men to make big money in this fastest-growing business.

Read what these manufacturers say about U. E. I. training which now enables you to quickly qualify for the top-notch positions!

"There seems to be a definite need for trained men and we believe every manufacturer should find use for such men. We believe the industry is being benefited by the wonderful work you are doing."—GENERAL ELECTRIC CO.

"Your course should be of great help to those working in the refrigerating industry. We have recommended it to our employees."—CHAMPION ELECTRIC COMPANY.

Students Praise Training

Unlike ordinary schooling. No textbooks—no study drudgery. Entirely practical and fascinating throughout. Charts, diagrams and pictures help you master every detail quickly and easily.

S. C. Mathias, Reading, Pa., reports a 15% increase in salary four months after enrolling. Geo. Zercher, New York City, won a job with Frigidaire on the strength of his training. O. Born, Cairo, Illinois, says: "I am only half through with my training, but I have already made small adjustments on refrigerators."

Get this FREE BOOK

Just off the press! Contains many interesting facts about Electric Refrigeration and this wonderful training. Get it free by filling in and mailing the coupon below. No obligation!

EMPLOYERS: When in need of trained men for any position, inquire about our graduates. No charge for this service. U. E. I. graduates represent all branches of the industry, are of all ages and live in all parts of world.

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4403 Sheridan Road, Chicago, Ill.

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CUSTOM BUILT
ELECTRIC REFRIGERATION

for every refrigeration requirement

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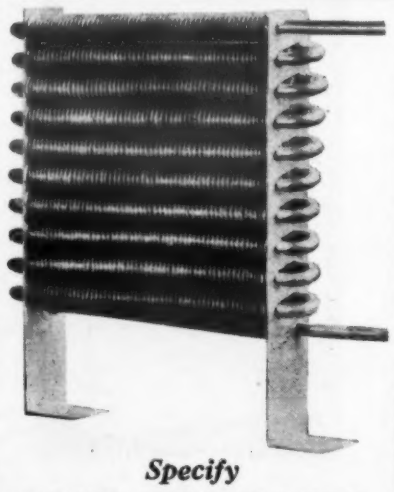

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MULTIPLE INSTALLATIONS

Judging the Credit Risk of Speculative Apartment Builders

Credit Conditions to be Analyzed by the Electric Refrigeration Dealer in the Sale of Large Installations to Builders

By Frank W. Gray
Pacific Coast District Manager, Absopure Refrigeration Corporation

ELECTRIC refrigeration dealers who are involved in the sale of multiple installations to builders of apartment houses often find themselves confronted by a complexity of financial structure and credit conditions not covered by the resources for analysis used by the ordinary business. This is particularly true in the case of speculative building, in which case even trained credit men are often at loss to pass on the financial responsibility of the interests involved.

New building projects may be classed as speculative and non-speculative. In the case of non-speculative building, the interests behind the project are building for permanent investment, usually intend to operate the building themselves, and in most cases their financial responsibility can easily be determined. Building of the non-speculative type is usually financed under a corporate structure of definite character, or by private individuals of definite financial rating.

The last ten years, however, have shown a marked development toward speculative building. This development has proceeded to such an extent in the apartment house field that it is not an exaggeration to say that well over fifty per cent of new construction now fails in this class.

Complexity of Interests Involved In Apartment Construction

In the case of speculative building we find that the apartment is being built by interests who are planning to sell it at a profit, or lease it for a long term, before it is completed or shortly after. The reputed owner is often merely a "dummy," merely owning the title to the lot on which the building is to be constructed, and a fictitious title to the building, the real ownership often being in the hands of the loan company who underwrite the building loan, or the contractors who take over the general contract. Thus we find in this case a complexity of interests frequently shared by the architect, the general contractor, the reputed owner, the loan company, and sometimes the principal material supply houses, all of whom are parties to the promotion.

The writer does not mean to imply that this complexity of interests is necessarily a financial danger sign, but he does mean to imply that in the case of speculative building the refrigeration dealer must scrutinize the financial responsibility involved with practical always analyses a proposition for his installs his expensive equipment.

In a situation of this kind the first impulse of the dealer is to turn to an experienced credit man or to his lawyer. The credit man who is trained in analysis of regular business credits is frequently found to be at loss in a situation of this type. He has no Dunn or Bradstreet report to reassure his mind, and he has no practical knowledge of the building industry with which to fortify his judgment. The lawyer, who always analyses a proposition for his client from a standpoint of utmost safety in case of a legal fight, is very apt to advise against the risk, or to attempt to write a contract so binding in its terms as to be of no value in completing the negotiations.

Basis for Speculative Building

The basis for speculative building is generally the fact that the contractor wants work to do, the architect wants plans to draw, the loan company wants loan business, which is very profitable at five per cent for ninety days, and the owner of the property wants to improve it with a first class building which should earn him some money. Nevertheless, this basis for speculative building cannot generally be classed as hazardous, since there is the earning power of the building to be considered, and this asset can be very nearly approximated by experienced building judgment. In the case of default of payment, an expensive delay is usually the penalty which the dealer who furnishes refrigeration has to pay. Most buildings, even where there is insufficient funds to pay construction costs, pay out eventually.

Therefore, the electric refrigeration dealer finds himself placed in the same category with the other material supply houses who extend credit to the builders, and a study of the credit rules adopted by the reputable material supply houses should be more beneficial to his interests than the solicited advice of the ordinary credit man or attorney.

First let us consider a typical case of speculative building. Jones owns a good-sized lot in the apartment house district of a respectably large city. (We will allow for the case of clearness that the lot is not mortgaged.) Halstead & Halstead, general contractors, are closely associated with Leach & Cross, architects, and with Mr. Rose, who parades under the name of the Builder's Mortgage and Loan Company. Mr. Halstead, Mr. Leach, and Mr. Rose get together and decide that a good-sized apartment house (not too expensively built) would pay a good income if erected on Mr. Jones' lot. They know that Mr. Jones has no available capital with which to defray the costs of construction, but this is no obstacle to the calculations.

Typical Method of Financing Building Project

Mr. Jones' lot is worth, in appraised valuation, $10,000. With a building on it the value would of course be much higher. Mr. Jones is therefore approached by the triumvirate with the plan that he be the owner of a four-story modern apartment house, in which he does not have to invest one cent. Mr. Jones consents, and Leach & Cross proceed to draw up the elaborate plans and specifications. These plans and specifications are submitted to Halstead and Halstead, who bid in the general contract at $45,000. The same plans and specifications are submitted to Mr. Rose, of the Builder's Mortgage and Loan Company, who decides to make a building loan for construction purposes of $30,000.00, this loan to be extended for a period of ninety days with interest at 5% for that period, and very often a brokerage fee into the bargain. However, the interest and brokerage is apportioned, it is reasonably certain that Mr. Rose will derive an income of 20% per annum from the use of his money. It is arranged that the building loan will be paid out as construction proceeds. Leach & Cross, architects, who drew the plans, are to receive half of their good-sized fee immediately, and half from an interest in the third mortgage after the building is completed.

At this point Mr. Electric Refrigeration Dealer comes into the picture. He conducts a careful investigation of the credit risk involved in his sale of equipment which comes to $2,500.00. He finds that Halstead & Halstead have apparently no clear assets outside their business, and are not disposed to pledge those assets if they have any. He finds that Mr. Rose of the Mortgage Company is liable only for an outlay of $30,000.00, and that payment of this amount is insured in the underwriting of the first mortgage after the building is completed. He finds that Leach & Cross, who have had a good deal to say in the matter of equipment for the building, are not involved at all in its credit analysis. He finds that Mr. Jones, the reputed owner, who will sign the contract, has no apparent resources outside of his lot on which the building is to be constructed. And lastly, he finds that the construction cost of the building will be closer to $45,000.00 than to $30,000.00, which is the total amount of cash in sight.

Dealer Must Analyze Earning Power of Apartment House

He must therefore look further in his analysis of the proposition. He is to receive 25% in cash upon the completion of his installation of equipment, the balance of $1,870.00, plus interest, to be paid in eighteen monthly installments, obviously from the earning power of the building. The electric refrigerator dealer who finds himself confronted with these conditions, or modifications of these conditions, must therefore base his analysis upon the earning power of the building after its completion, and must also be in a position to estimate the encumbrances which will be placed upon that earning power by the various mortgages to be underwritten and thereby arrive at his margin of safety.

Even in spite of this complexity of financial structure and apparent lack of solidity, a deal of this kind is more often safe than otherwise, and the dealer will throw away much good business if he refuses such deals point blank. For the fact remains that buildings are worth considerably more when they are finished than before they are started, and earning power is a resource which more and more of recent years is entering into the credit structures of American business and contributing to the liquid condition of capital.

Dealer's Warranties for Payment

Let us consider the dealer's warranties of payment. First, there is the fact that the electric refrigeration is very necessary to the maintenance of the building, and that the prompt service of the dealer is essential to the correct operation of the equipment. The administration of the building would be sadly impaired if the refrigeration equipment were suddenly removed or allowed to lapse in its operation. The refrigeration payments are therefore very likely to be promptly met from the income of the building. Second, the reputation of the general contractors, Halstead & Halstead, and the architects, Leach & Cross, should be seriously considered by the dealer, since these parties were instrumental in the promotion of the building enterprise, and their judgment, more than that of Mr. Jones, was evidently decisive in the determination of its earnings. It is very destructive to the reputation of general contractors and architects to have their building enterprises go into default, and has a decided influence upon their ability to finance loans for further building. If the reputation of these parties is found to be good in previous projects, the chances are that the credit is assured. Third, the refrigeration dealer has the signature of Mr. Jones on his conditional sale contract. If he is wise, he will also have the signatures of Halstead & Halstead, contractors, if they can be obtained. A pretty good rule to follow is to have as many names as possible of interested parties on a contract. In case of default of payment, the parties who have signed the notes may of course be pressed for payment. Lastly, the refrigeration dealer knows beforehand the type of building which is to be constructed and the neighborhood in which it is to go up. Any competent real estate man can give a fairly accurate appraisal of the earnings of such a building in such a neighborhood.

Recourses Open to the Dealer in Case of Default

Let us next consider the dealer's recourses in case the project does go into default and payments are suspended. The first recourse which naturally presents itself is the immediate removal of compressors, cooling coils, refrigerators, in other words, those parts of the installation which can be taken out without damage to the building. The tubing and conduit must of course be left in the walls. If replevin rights are clearly stated in the conditional sales contract, the dealer is fairly safe in removing his equipment, although legal opinion in various states differs as to whether electric refrigeration equipment is a part of the realty and therefore not subject to removal, or whether it may be removed as a separate fixture. Although this is the first recourse which presents itself, it should be the last recourse to be followed. In most cases, if the building has fairly good earning power, suspension of payment is only temporary. Mr. Dealer can better afford to wait a few months than to load himself up with second-hand equipment and incur the displeasure of the other interested parties. If the building is clearly in default, however, and this recourse is decided upon, it should be carried out as quickly and efficiently as possible, the removal of equipment being made by an experienced crew of men who will not otherwise damage the building. The next recourse which presents itself is to place a lien on the building. This is the same recourse which will probably be followed by other material supply houses, and Mr. Dealer will do well to get his lien through as soon as possible—better in this case to be the first than the last. The next recourse is to bring pressure to bear upon the signers of the refrigeration contract, either through a lawsuit, or through refusing of service on the equipment (the last is not always advisable, however, since other service companies can be called in, and damages can be claimed from poor operation of the equipment, which might be construed in court as a reason for suspension of payments).

Many high grade mortgage companies refuse to underwrite first and second mortgage bonds on buildings which are not assured of being clear of liens or replevin actions. Thus, the refrigeration dealer, in company with other material supply houses, often finds himself in the position of being forced to relinquish his two most important recourses of action in case of defaulted payments. Relinquishment of these rights is not always as hazardous as it sounds. Replevin or lien rights should be recourses of last resort in any case. But in case of such relinquishment the dealer must analyse the deal very carefully. He should be sure of the reputation of the builders, of the type of building to be erected and its probable earning power, and he should inform himself carefully as to who are the other material supply houses or sub-contractors who are also relinquishing their lien and replevin rights. If the material supply houses and sub-contractors are of high grade reputation, and if the other aspects of the analysis stand up well under credit scrutiny, then the deal may be construed as reasonably safe in spite of the relinquishments.

The consensus of this article is as follows: That ordinary methods of determining credits are not always satisfactory in the analysis of speculative building ventures, and that inasmuch as a great deal of the building of the present day is done on this basis the dealer must apply some practical business sense of his own in analysing such deals. That the electric refrigeration dealer will do well to profit as much as possible by the experience of material supply houses in determining such credit foundations, since these interests are experienced in such deals. That the reputation of the contractors, architects, and other sub-contractors, as well as estimation of the earning power of the building to be constructed are often determining factors in judging between a good and a bad speculative construction deal.

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HOME ECONOMICS

KELVINATOR HOME DEPARTMENT WILL TEST NEW RECIPES

Detroit, Mich.—Addition of a home economics department to the advertising and sales promotion organization is announced by Kelvinator Corp. The purpose of the new department is to assist dealer and distributor organizations in the promotion of retail sales by special demonstration work.

A series of refrigeration classes are being planned and these will be open to all women members of Kelvinator organizations. Special research work will be conducted by the home economics group in the domestic field.

A model kitchen, called the "Kelvin Kitchen," has been set up and equipped. Included in the modern appliances which grace the Home Economics Department are a white all-porcelain Kelvinator, trimmed in gray; an automatic Westinghouse electric range, and an electric kitchen cabinet. The room also contains six Kelvinators, in which experiments on food research will be made.

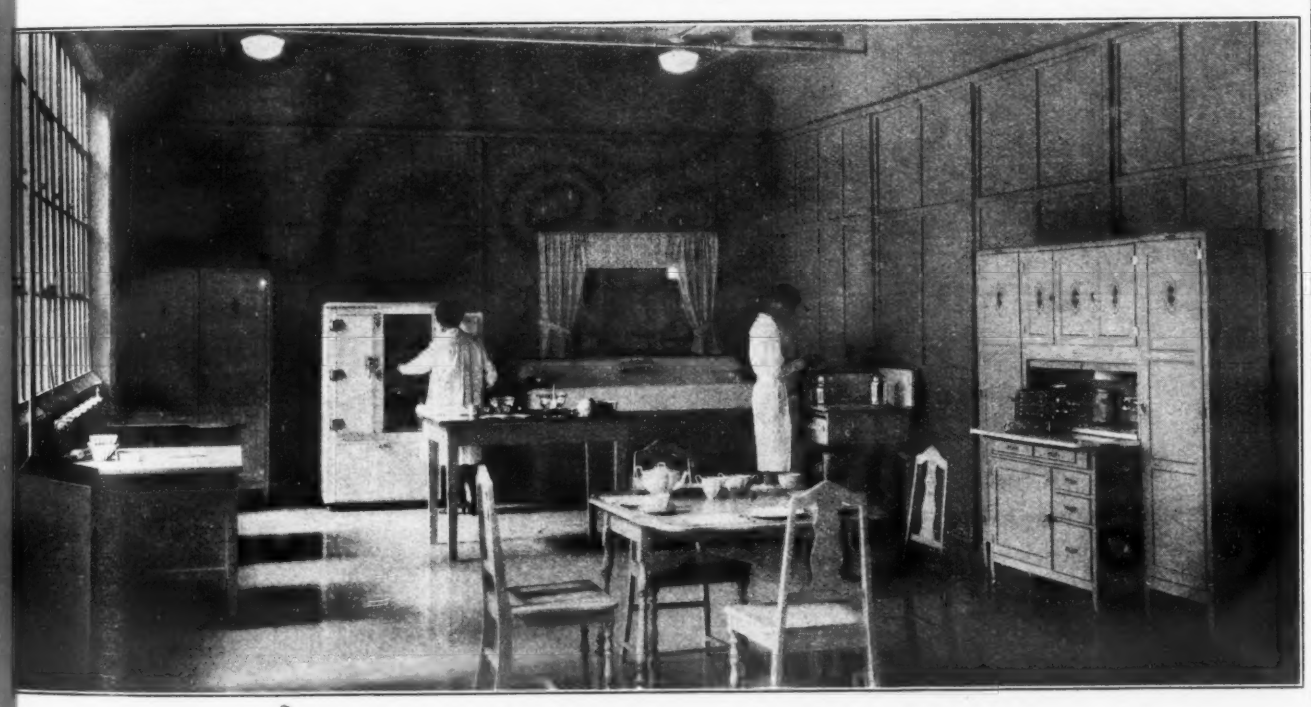
All work in connection with the home economics department will be under the direction of Mary E. Kirk, who has been with Kelvinator Corp. for the past three years. She will be assisted by Marion F. Sawyer and Sadie M. Chase.

Plan Food Research

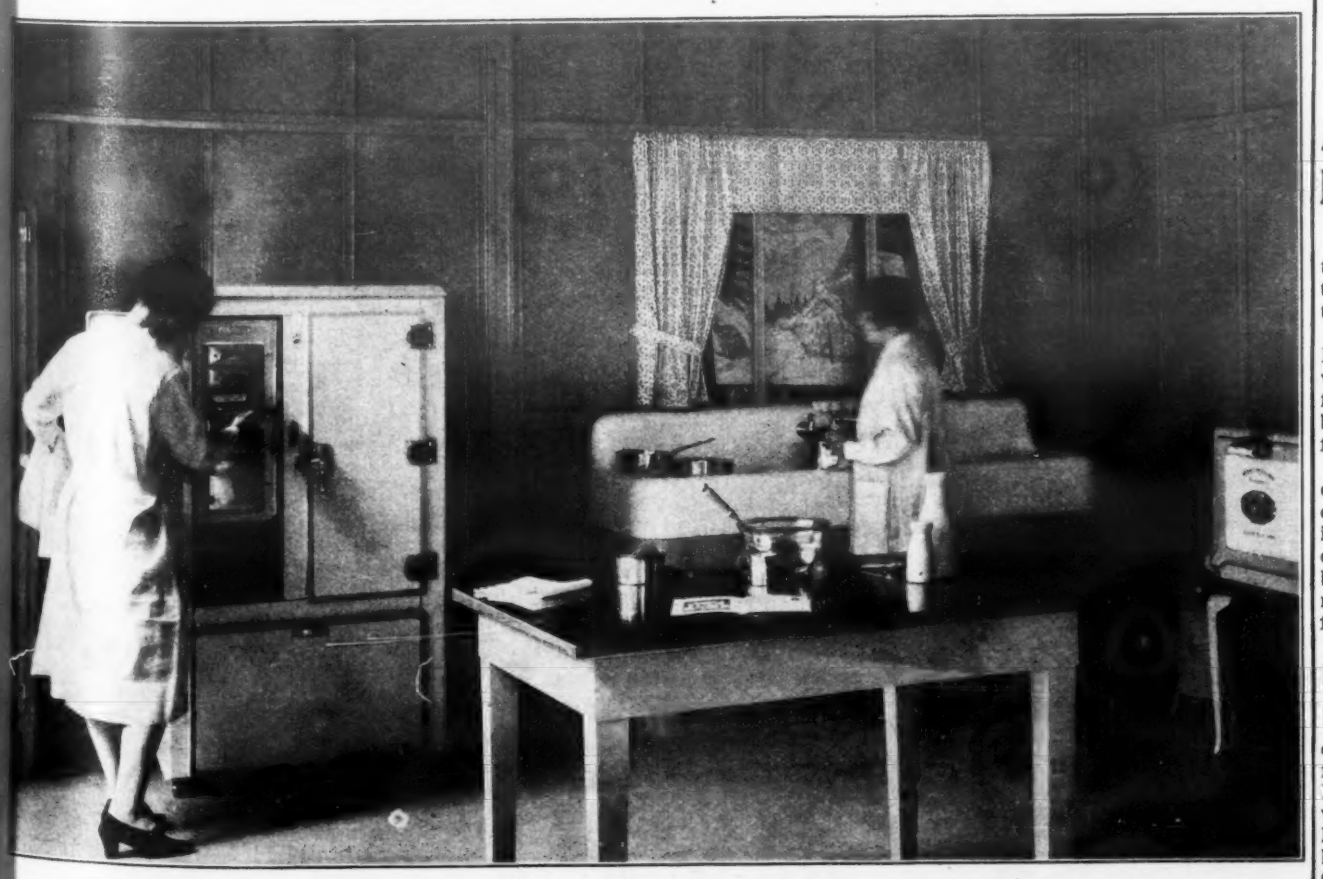
Sadie M. Chase

Mary E. Kirk

Marion F. Sawyer



Kelvin Kitchen Where Food Research Will Be Carried On



Home Economists Preparing Recipes for Tempting Frozen Desserts

GROCERY STORES IN SMALL KENTUCKY TOWN 100 PER CENT MODERNIZED

All twelve grocery stores in a Kentucky town of several thousand inhabitants are reported to have modernized their stores following the demonstration of a model grocery store layout in connection with the conference of grocery executives held in Louisville, February 25 and 26, 1929.

Every grocery in town reports a uniform increase in sales since the remodeling and rearrangement of their establishments. The patronage of the surrounding territory has been drawn upon to a greater extent. In addition, there has been a marked increase in the consumption of the so-called "luxury" items, including fresh fruits and vegetables, over the days before these commodities were so attractively displayed. It is stated that this increase has been achieved without any corresponding reduction in the consumption of staples.—*Domestic Commerce.*

REFRIGERATION PATENTS ISSUED

ISSUED OCTOBER 22

1,732,325—MACHINE FOR SCORING ICE BY FLUID-PRESSURE MEANS. George Braungart, Jr., and Frank Kaye, Sr., Atlanta, Ga. Filed Oct. 31, 1927. Serial No. 229,913. 1 Claim. (Cl. 125—13.)

1,732,343—METHOD OF FORMING PIPE LOOPS. Otto M. Summers, Dayton, Ohio, assignor, by mesne assignments, to Frigidaire Corporation, a Corporation of Delaware. Filed Jan. 31, 1927. Serial No. 164,880. 8 Claims. (Cl. 29—156.)

1. The method of manufacturing pipe loops having portions of different cross-sectional contours comprising, forming a length of pipe into a coil having a plurality of convolutions, changing the cross-sectional contour of a portion of each convolution, then severing the coil at the portions thereof which have been changed in cross-section, to provide a plurality of individual pipe loops.

1,732,359—KITCHENETTE. Lou Shields Gilmore, Los Angeles, Calif. Filed Jan. 21, 1925. Serial No. 3,777. 1 Claim. (Cl. 62—42.)

1,732,460—REFRIGERATING PROCESS. Samuel C. Carney, Tulsa, Okla., assignor to Shell Petroleum Corporation, a Corporation of Virginia. Filed Jan. 2, 1926. Serial No. 78,901. 3 Claims. (Cl. 62—172.)

1. A process of freezing liquids which consists in spreading a refrigerant in a thin film and expanding the same in a chamber, supplying a liquid to be frozen to the external wall of the chamber in the presence of a partial vacuum, removing the liquid when frozen, compacting the frozen liquid removed into cakes and continuously maintaining the partial vacuum throughout the entire operation.

1,732,472—DISPLAY CASE. Clement V. Hill, Trenton, N. J., assignor to C. V. Hill & Co., Inc., Trenton, N. J., a Corporation of New Jersey. Filed Apr. 12, 1929. Serial No. 354,624. 1 Claim. (Cl. 312—126.)

In a display cabinet, a shelf, trackways for the shelf, and a box like member secured to each end of the shelf with its ends projecting beyond the front and rear edges of the shelf, rollers pivotally mounted on a vertical axis within the box like member and projecting through apertures beyond the side walls of the box member to engage a trackway, beyond the front and rear edges of the body of the shelf, and rollers pivotally mounted on a horizontal axis in the box member, and engaging a trackway, the last named rollers being positioned between the front and rear edges of the shelf body.

1,732,596—REFRIGERATING METHOD AND APPARATUS. Harry D. Edwards, Larchmont, N. Y. Filed May 5, 1923. Serial No. 636,843. 12 Claims. (Cl. 62—116.)

1. The refrigerating process which comprises the commingling of refrigerating gas at low pressure with lubricant, passing the gas and lubricant through a pump to raise the pressure of the gas and lubricant, cooling the gas to condense the refrigerant, and separating the condensed refrigerant and lubricant and limiting the flow of lubricant by the amount of pressure within the pump.

1,732,802—SEJARABLE ICE CAKE AND PROCESS OF MAKING THE SAME. Samuel C. Bloom, Chicago, Ill., and Willis H. Carrier, Essex Fells, N. J. Filed Nov. 16, 1928. Serial No. 319,810. 6 Claims. (Cl. 62—172.)

1,732,963—COOLING AND CONDENSING TOWER. Edwin Burhorn, Hoboken, N. J. Filed June 20, 1927. Serial No. 200,113. 6 Claims. (Cl. 257—37.)

1,732,996—REFRIGERATING CONTAINER. Jeff Wandel, Grants Pass, Oreg. Filed May 14, 1928. Serial No. 277,649. 1 Claim. (Cl. 225—40.)

AIR TRANSPORTS ADOPT ELECTRIC REFRIGERATION

Los Angeles, Calif.—With the formation here of the Aerial Express Corporation, Ltd., an entirely new use for electric refrigerators is foreseen.

The company will begin operations December 1 with seven planes, which will have fuselages specially designed for their type of use. Two of these will be equipped with electric refrigerators for perishable freight.

The company will operate up and down the Pacific Coast from the head of the Gulf of California to Seattle, and it is expected that perishable goods will constitute a large part of the company's business, necessitating the addition of more planes equipped with electric refrigerators.

DRIPLESS ICE CORP. FORMED

Albany, N. Y.—Dripless Ice Corp. was organized on Oct. 25 to manufacture refrigeration devices. Fred A. Berlin, 1319 F St., Washington, D. C., Lincoln Rockwell Soule, David S. Hawkins, Concord, Mass., are the directors. Frank C. Taylor, Kenneth R. Gregory, Robert L. Cookingham, 120 Broadway, New York City, are subscribers.

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